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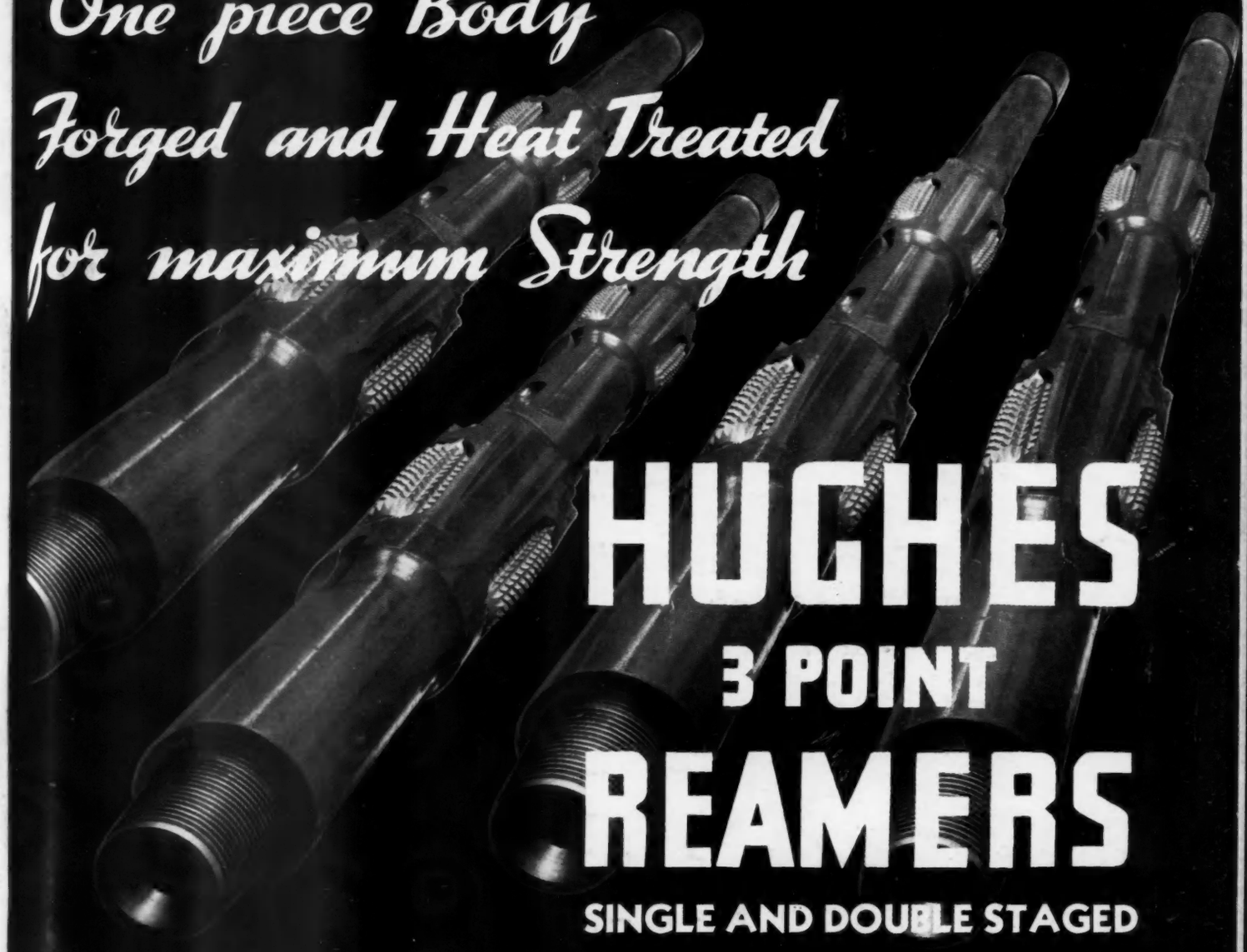

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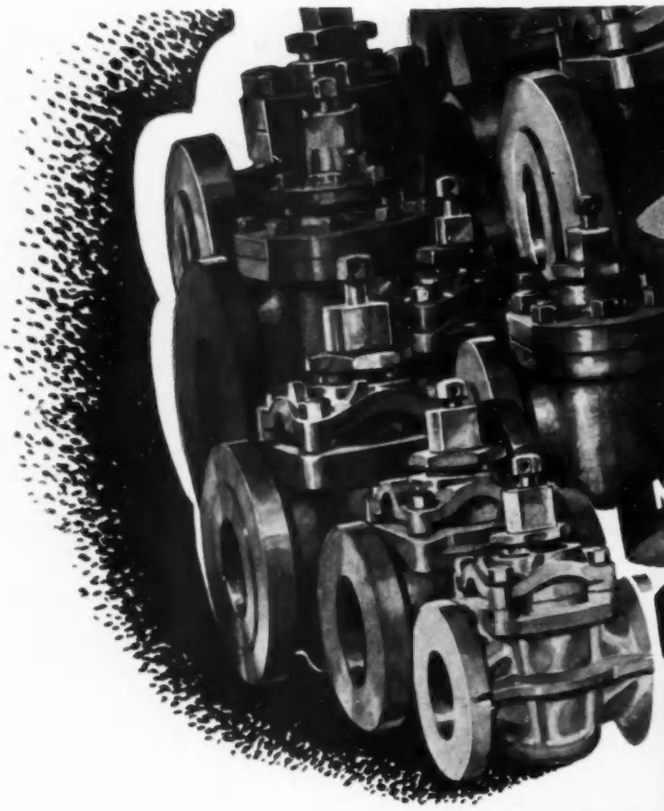

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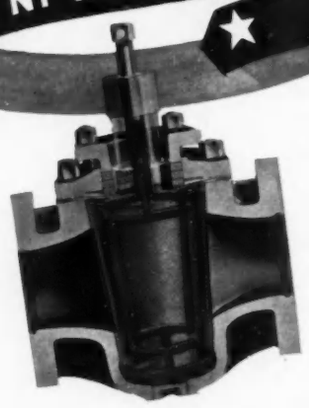

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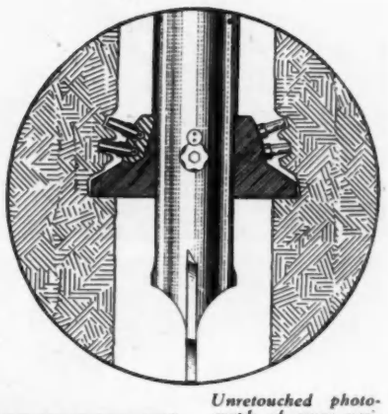

Unretouched photograph of cores easily taken with Wall Sampler blades. Drawing shows position of blades when taking cores.

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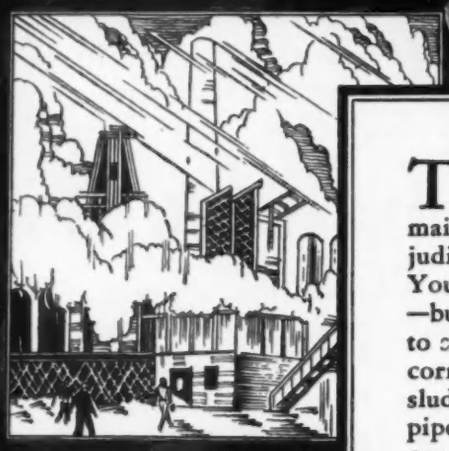

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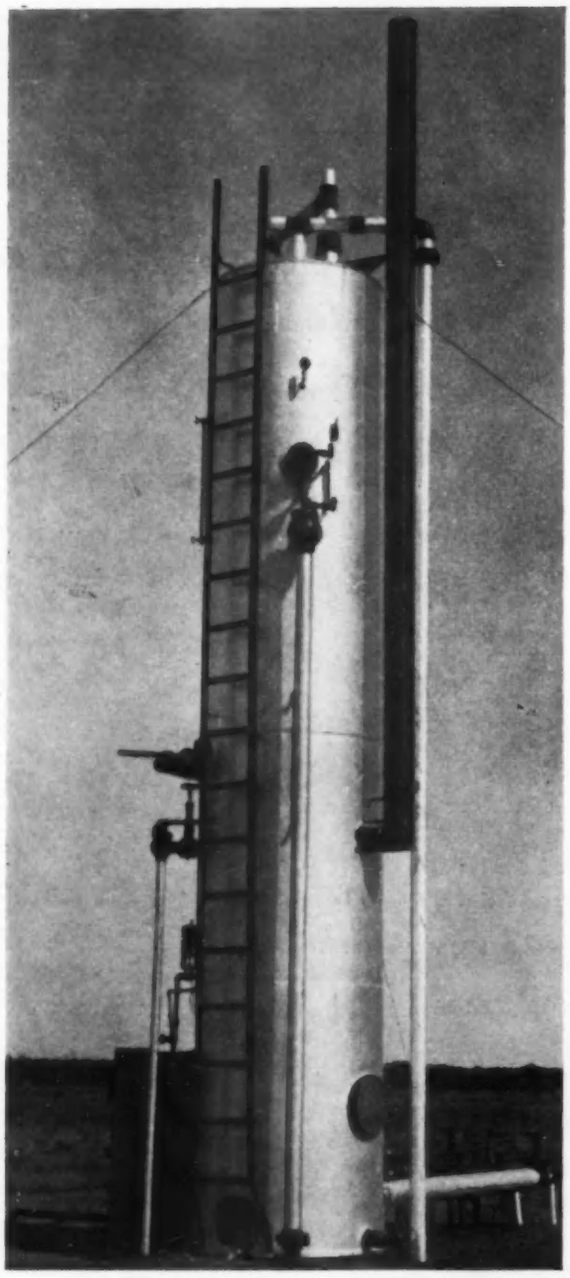

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VOLUME 76, No. 13 MARCH 11, 1935

THE OIL WEEKLY

FOR OIL AND GAS PRODUCTION AND
PIPE LINE DIVISIONS

ENGINEERING • NEWS • STATISTICS

The Changing Panorama

Prorated Field Reserves

THE industry has heard much about the large potential reserves represented by fields operating under proration and unitization. There seems to be little question but that these reserves have been overestimated. Present estimates on the possible ultimate recovery of these fields is far beneath figures established early in their lives. Consequently, it is of interest and value to review basic data on these pools. S. F. Shaw ably and concisely presents this information in an article starting on page 18.

Drilling Increases

DRILLING activity in the United States continues at a relatively high level, according to February statistics. Wells completed in February, 1935, average 49.6 per day as compared with 38.1 a year ago and 30.6 in February, 1933. Oklahoma, Texas, California and Eastern States were responsible for the greater number of drilling operations. Page 44.

Stocks Up

STOCKS of both finished products and crude oil increased during February. Finished gasoline stocks were up more than 6,000,000 barrels and crude stocks were enlarged by approximately one million barrels.

The increase was due to greater refinery activity,

A general view of the Commodity Exchange New York, March 5, just after the opening of the new gasoline and crude oil futures market.

International News Photo

poor weather conditions and increased hot oil production.

. A more promising outlook appeared as the month closed, however. Stricter enforcement in East Texas is in prospect and refiners' desire to increase gasoline stocks is thought to have been abated. Page 44.

Indemnity Bonds

TEXAS Senate Bill No. 368 would add a considerable burden to the legitimate operator, who already is liable for any and all claims. The bill provides for the filing of an indemnity bond in the sum of $2500 for any well drilled, or to be drilled to a depth not exceeding 2000 feet, and a sum of $5000 for any well drilled or to be drilled over 2000 feet. A firm or person may, in lieu of filing bond on each well being drilled, file one bond for $25,000 to cover all operations of such person or firm. The stated purpose of the bill is to protect laborers working on such wells. It now is in the hands of the Senate Committee on Commerce and Manufacturing.

The Oil Man's Calendar

MARCH
- 21-23 *American Association of Petroleum Geologists, Wichita, Kansas.*
- 29 *American Petroleum Institute (Kansas Chapter), Hutchinson, Kansas.*

APRIL
- 8-13 *Oil Equipment and Engineering Exposition, Houston, Texas.*
- 10-11 *American Petroleum Institute, Division of Production, Mid-Continent District, Spring Meeting, Amarillo, Texas.*
- 11-13 *Petroleum Industry Electrical Association, Dallas, Texas.*
- 18-19 *National Petroleum Association, Cleveland, Ohio.*
- 22 *American Chemical Society, New York.*
- 25-26 *American Petroleum Institute, Division of Production, Southwestern District, Plaza Hotel, San Antonio, Texas.*

MAY
- 1-3 *Natural Gasoline Association, Tulsa, Oklahoma.*
- 8-11 *Oil and Gas Power Division, American Society of Mechanical Engineers, Tulsa, Oklahoma.*
- 14-16 *American Petroleum Institute, Mid-Year Meeting, Mayo Hotel, Tulsa.*

JUNE
- 20-21 *Pennsylvania Grade Crude Oil Association, State College, Pennsylvania.*

SEPTEMBER
- 25-27 *National Petroleum Association, Atlantic City, New Jersey.*

NOVEMBER
- 4-5 *Independent Petroleum Association of America, Annual Meeting. Dallas, Texas.*
- 11-14 *American Petroleum Institute, Annual Meeting, Biltmore Hotel, Los Angeles.*

Mud Reconditioning

THE results obtained by the operation of a central mud reconditioning plant in the Ventura Avenue, California, field have demonstrated both its efficiency and economy. The primary objective of the central mud reconditioning plant is the recovery of weight material from old mud and its use as new drilling fluid, however, it also is aiding the control of mud properties. Page 28.

News Briefs

The so-called "midnight" injunctions, which have hampered the enforcement of Texas oil proration laws, were eliminated in a new law that became effective March 6, and which provides that no injunction is to be issued until after a five-day notice is given the Railroad Commission and a hearing held. Page 15.

* * *

A compromise bill to prevent waste of gas in Texas has been prepared. It contains most of the important features of the two bills introduced previously, but eliminates radical phases thought likely to block passage of the earlier bills. Among the provisions is the requirement that no gas be blown into the air, and that residue from both sour and sweet gas must be returned to the producing formation. Page 15.

* * *

Residents of Oklahoma City voted on March 5 to extend the oil drilling zone more than two miles to the north, which includes a large portion of the eastern residential section. Consequently, many additional wells will be drilled in the Oklahoma City field. It is estimated the new zone will call for the expenditure of $17,700,000 for developments. Page 12.

* * *

The Oklahoma Senate on March 6 voted to reduce the proposed gross production tax from eight percent, as passed by the House, to four percent. It is thought the Senate probably will agree to a five percent tax when House and Senate leaders meet for conference. Page 12.

* * *

Mid-Continent refiners soon will be provided with their third major gasoline pipe line. Cimarron Valley Pipe Line Company, a Champlin Refining Company concern of Enid, Oklahoma, proposes to build a 250-mile 6⅝-inch gasoline line from Enid to Superior, Nebraska. Page 14.

East Texas Control Brings Optimism

JACK LOGAN
Associate Editor

New federal tender board is functioning smoothly. Hot oil decline promotes higher gasoline prices. Legislatures cooperate in oil control programs, but threaten higher taxes. Connally bill passage set speed record. Texas officials being praised.

THE outlook for the oil industry has continued to grow brighter, in consequence of improved regulation in East Texas. There was further strengthening of the markets last week, with the new federal tender board in East Texas actually functioning and bringing the volume of hot oil producing and refining down. And additional market improvement seemed likely, as it appeared that the new stability would prove reasonably lasting.

The new tender board for East Texas, set up at the opening of March under the recently enacted Connally Act, was reported functioning smoothly during the past week. It had barely started operating, when it was attacked in a federal district court. But a formal court ruling was not made, when it was agreed that settlement of controversy involved would be attempted through the regular administrative channels. And so any question as to the board's powers was reserved for future court decision.

Later in the week, however, the federal government took the offensive in litigation involving the law authorizing the tender board. Exhibiting confidence in the measure, the federal authorities sought to enjoin six oil, railroad, and tanker companies from moving certain oil interstate. The case is scheduled for hearing in Houston March 18 before Federal District Judge T. M. Kennerly. The oil involved has been moved to Houston from East Texas, and is alleged to have been produced in violation of the Texas Railroad Commission's regulations.

Hot Oil Output Lower

HOT oil activities apparently have contracted to greatly reduced proportions, although there are not yet available accurate estimates on the volume of hot oil output since reinstatement of federal shipping control. The hot oil activities had begun contracting materially, however, in the latter part of February, even before the new federal tender board was set up. The Texas authorities had exerted themselves greatly toward strict enforcement, and were getting remarkably successful results. With advent of the federal tender board, the control cause was, of course, further reinforced.

While close estimates of illegal producing and refining in recent days have not been available, reasonably trustworthy evidence of reduced hot oil output was furnished in the further closing down of East Texas refineries. On March 5 only 20 plants were operating, compared with 22 the previous day, and additional plant shutdowns were anticipated. It has been largely through the refineries of the district that illegal production has been encroaching upon and disturbing the markets.

Market Improvement in Progress

EVEN before the new federal tender board had had an opportunity to demonstrate its effectiveness, the gasoline markets, wholesale and retail, were developing pronounced strength. The similar board that operated from October 25, 1934, to January 7, 1935, was eminently successful and similar success is anticipated for the new board.

At East Texas, North Texas, and Oklahoma refineries, the tank car market for tendered third-grade gasoline was strong at the middle of the past week at 3½ cents a gallon, or about an eighth-cent more than in the previous week, while some sales were being reported at even higher prices. The other grades of material were up similarly. Further improvement of prices was expected, in the meantime.

The retail markets of Texas, sensitive to East Texas control, had registered pronounced improvement by the middle of the week. In Houston, for instance, third-grade gasoline jumped to 15 cents a gallon (including five cents taxes) from 12 cents.

Attack Against New Tender Board

THE court attack that was made against the new federal tender board was that in which F. W. Fischer, Tyler attorney, representing six East Texas re-

finers, sought injunction to restrain the board from interfering with oil shipments approved by the Texas Railroad Commission. Hearing on the petition was concluded before Judge Randolph Bryant at Beaumont March 5. But there was no formal court ruling, as it appeared that the controversy would be settled otherwise. Complainants agreed to submit pertinent information to the new tender board, and to seek from the board approval of an arrangement by which the railroad commission authorized shipping of the oil under prescribed conditions and limitations. There was a possibility the board would permit the oil to move interstate. Otherwise, it was believed, the petition for the injunction would again be pushed.

Attorney Fischer gained prominence as counsel for complainants in the Panama-Amazon case, through which the original federal tender board was scrapped by the Supreme Court. (N.I.R.A. Section 9-c held invalid January 7, 1935.)

State Officials Welcome Board

A FAVORABLE factor in the new phase of oil control in East Texas is the harmony among all the authorities involved. State authorities are naturally jealous, ordinarily, of federal encroachment in their normal fields. But Texas authorities have consistently welcomed the type of federal regulation involved in the Connally Act. It represents federal cooperation, not federal dominance. And last week Colonel Ernest O. Thompson, chairman of the Texas Railroad Commission, was joined by Governor James V. Allred and Attorney General William McCraw of Texas in welcoming the new tender board to the state.

At the same time, the Texas officials reiterated their determined opposition to federal "encroachment" in oil control matters, such as that contemplated in the Thomas and Disney proposals and in the ideas of Secretary Ickes for making the oil industry a public utility.

Interstate Compact Gains Ground

MEANWHILE, possibly tending to stave off stricter federal oil control, there has occurred some additional progress on the proposal for adoption of an interstate oil control compact instead of federal regulation. It is proposed to inaugurate the compact upon ratification by three states and authorization by Congress. New Mexico has already ratified the compact. Both houses of the Oklahoma legislature have approved it. And a bill to provide for its ratification was unanimously approved last week by the oil, gas, and mining committee of the Texas house of representatives.

New Oil Law in Texas

THE state legislatures have been habitually receptive to oil control proposals, and reasonable ideas of the kind ordinarily can be made into law without serious opposition. In the present session of the Texas legislature there has already been adopted a law designed to improve proration enforcement. Governor Allred at mid-week signed a bill which thereupon became effective, requiring district courts to hold hearings before issuing orders restraining the railroad commission from enforcing oil regulations.

Swift Passage of Connally Bill

THERE is a story of action, speed, suspense, and nick-of-time rescue back of the cold fact that the Connally Act, authorizing the new tender board, was passed by Congress and signed by the President February 22. In the situation there was involved every element of the old fashioned movie thriller, in which the heroine was cut loose from the rails a split second before the fast express train roared by.

Strapped across the rails in this case was the oil industry. The fast express that was rushing along and threatening destruction was a railroad injunction dissolution suit, which was expected to overthrow state control of interstate oil shipping in East Texas. The potential saviors were the sponsors of the Connally bill. For a happy ending, it was necessary for the sponsors to rush to the industry's rescue with the enacted bill before the court hearing. And that was the way the story worked out.

Crowded Program for a Day

IN more detail, the circumstances were essentially as follows. By Thursday, February 21, the joint conference committee of Senate and House had before it the differing bills passed by the Senate and House, respectively, and the differences remained to be compromised. That night it was announced that the President would leave Washington early Saturday morning and be gone until Tuesday or Wednesday. But Monday was the day when the railroad injunction suit would come up at Austin and it was believed the state oil control authorities would lose. If the danger of breakdown of East Texas control was to be averted, consequently, it would be necessary to get the federal shipping control bill made into law within the one day, Friday, preceding the President's scheduled departure.

It would be necessary, in detail, to accomplish these things during the one day: get the bill out of conference, signed by the conference committee, passed by both houses, signed by the Speaker of the House, Joe Byrns, signed by Vice President John Garner as presiding officer of the Senate, and finally signed by the President. (All these things would have to be done by Friday night, as there was no session on Saturday.)

All those things were actually crowded into the one

(*Continued on page 47*)

Senate Finance Committee *Begins* Investigation of Code

Washington, D. C.—With the appearance before it of Donald Richberg, executive director of the National Emergency Council and right-hand man of former Recovery Administrator Hugh S. Johnson, the Senate Finance Committee last week began an intensive investigation of the operations of the National Industrial Recovery Act.

No legislation continuing the act after June 16, next, will be written until the inquiry has been completed.

Before the end of the hearings, which began March 7, the committee is expected to hear witnesses discuss the oil code and may ask General Johnson to testify before it regarding the early days of the NRA.

The reports of the Darrow review board, which included a scathing attack on the oil code, will be studied by the committee, it was said.

Attention of the committee already has been directed to the code by Senator Nye of North Dakota, co-author of the resolution calling for the investigation, who is sitting with the committee during the questioning of witnesses.

In a voluminous brief filed with the committee last week, Senator Nye attacked the oil code on a number of counts, principally involving the question of prices.

The senator charged that prices were pegged and gasoline prices at refineries increased without improvement in retail markets, despite higher wage levels, added employes and increased costs to distributors. The large companies compensate themselves in the producing and refining branches to offset losses in marketing, he alleged.

It also was charged that the large companies feel they are freed from prosecution under the anti-trust laws and that they have been so assured by Washington officials, and that they have so fixed the price structure for petroleum products that it is impossible for the jobber to make a margin of profit.

Nye alleged that Standard Oil Company of Kentucky last November put into operation, with the assistance of other large companies, a policy of setting up what was arbitrarily called a normal price for the state. Under this "normal," he asserted, the jobber must distribute gas for 5.1 cents per gallon, out of which the dealer gets four cents, leaving the jobber 1.1 cent to conduct his business despite the fact that the large companies give commission agents from 1.75 to 2.25 cents per gallon merely to deliver their gasoline from bulk plant to dealer.

Apparently moving to meet the Senate investigation, the recovery administration has had prepared by the research and planning division a 62-page report, which has not been generally distributed, showing how the position of industry has improved under the recovery program.

While the report does not claim that the improvement is due to the National Recovery Administration's effort, the figures are so linked with the codes as to indicate that NRA officials feel that they should be credited with the gain.

The report states that the oil industry for the first nine months of 1934 had a profit of $41,800,000 compared with a deficit of $7,900,000 for 1933 and a profit of $20,400,000 for 1932.

Connally Act Validity Attacked at Shreveport

Shreveport, La.—Constitutionality of the Connally Act was attacked in federal district court here Friday by attorneys for Griffin & Winters, Gladewater, Texas, refiners, in an answer filed to a federal injunction proceeding brought in equity under the act.

The answer claims that the Connally Act violates Article 1 of Section Eight of the Constitution of the United States dealing with interstate commerce, with the Fourteenth Amendment, "as well as other provisions of said constitution." Defendants also claim that the facts set up in the petition of the government for the injunction "are insufficient to constitute a valid cause of action against defendants."

Griffin & Winters, operated by Glenn Griffin and R. E. Winters, were cited in an injunction action brought by the government to restrain the alleged shipment of hot oil from East Texas. The others cited in the action were O. K. Oil Company, operated by Mike Lyles of Shreveport, and Louisiana, Arkansas & Texas Railway.

A motion to dismiss was filed in behalf of O. K. Oil Company but it did not attack the constitutionality of the Connally Act. The railroad filed no motions but submitted an answer which set forth that the railroad had violated no law and had no intention of doing anything except to observe the provisions of the Connally Act.

By agreement of the government and the defendants, the restraining order issued in the action, which is an equity proceeding, was continued until such time as the case may be disposed of on its merits or motions. The government asked that the case be heard at a date convenient to the court, either at Shreveport or in some other division of the district. This was agreed to.

Administration Studies Tender Board Attacks

Washington, D. C.—Attacks already launched against the newly revived Federal Tender Board this week were receiving the attention of officials of the oil administration.

Reports to Washington asserted that efforts are being made to require the board to accept the action of the state tender board as final, success of which, it was declared, would leave the industry where it was before enactment of the contraband oil law.

The tender board was ordered revived last week, immediately following the issuance by President Roosevelt of an executive order designating Secretary of the Interior Ickes as agent of the President under the Connally law.

The executive order was given added significance by the inclusion of a prohibition against the issuance without Presidential approval of any regulation for the enforcement of the act in which fine or imprisonment are to be imposed for violations.

This is in line with the President's statement in his message to Congress February 20, asking for continuation of the recovery act, in which he declared that some means other than jail sentences should be devised for obtaining compliance.

The regulations setting up the tender board follow closely those in effect prior to the adjudication of Section 9 (a) of the recovery act as unconstitutional by the United States Supreme Court.

Oil Compact Bill Approved By Committee

Austin, Texas.—Ratification of the oil states compact signed at Dallas recently is provided in a bill introduced in the Texas Legislature last week by Representative A. K. Daniel of Crockett.

The Daniel bill includes the entire compact. It stipulates that the governor, or his representative, shall represent Texas at all compact meetings, and authorizes him to terminate the compact upon 60 days' notice to other signatories.

The bill was approved unanimously by the House Committee on Oil, Gas and Mining last Tuesday. The only amendment provides that the $3000 appropriated for expenses shall be paid out of Railroad Commission funds.

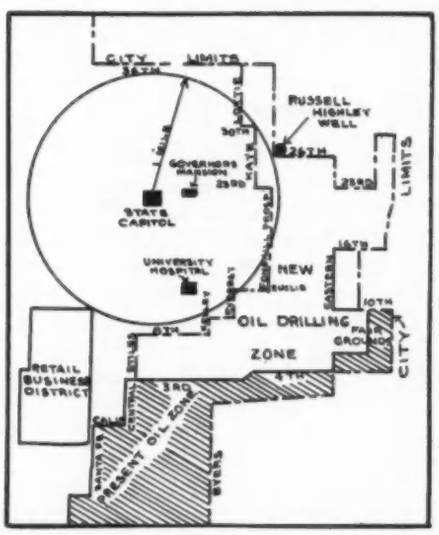
Oklahoma City *Drilling Zone Extended* Two Miles Northward

Oklahoma City.—A battle of many months duration apparently ended here on Tuesday evening, March 5 when residents of Oklahoma City voted 12,238 to 9665 to extend the oil drilling zone more than two miles to the north and to include a large portion of the eastern residential section. The new zone extends over an area that includes more than 3000 business houses, residences, churches and school buildings and includes a population estimated at approximately $25,000.

Among the claims made by opponents of the extension were: no benefits to labor, an average royalty of only a few dollars per year, that granting of the extension would encourage oil operators to ask further extensions into the western portion of the city, that an extension of the oil zone would destroy the "cultural foundations" of the city, that neither the individual property owners nor the city as a whole would benefit from extending the oil drilling zone, that more than $20,000,000 of surface improvements have been made in the new zone, that property would be destroyed and homes ruined and that fire insurance rates would be increased due to the increased hazard of oil drilling and production.

Proponents of the bill claimed: that 8000 new jobs will be created through a $17,700,000 investment with a resulting direct oil pay roll of $3,000,000, that the average royalty paid to the owner of a 50-foot lot based on the record of 207 of the 265 wells drilled to the Wilcox sand inside the city limits has been $3150, that commercially recoverable oil does not extend west of the Santa Fe railroad right-of-way and that dedication deed restrictions and real estate development forever bar drilling in the western portion of the city, that pastors of the churches within the areas already drilled agree that their people, churches and the entire tone of life have been enhanced by oil revenues, that the county, city and school board treasuries have been enriched $4,195,201 from oil revenues, that drilling destroys no property, and that the fire loss in the present oil zone is far less than for the city as a whole. It was further claimed by the proponents that assessed valuation of surface improvements in the new drilling zone is $1,600,000 and that a real estate appraisal of the improvements would not exceed $3,000,000. It was estimated that royalty to be derived from the drilling would amount to approximately $7,500,000.

The fault line defined to the south apparently cuts approximately through the middle of the new zone and in the field proper no production of great consequence has been found on the east or downthrow side. However, the fault dies out to the northwestward, permitting Wilcox sand to swing around on the downthrow or east side and in the southern portion of the new zone important production may be found. Phillips Petroleum Company, one of the leaders in the fight for the extension, is said to have more than 200 acres of leases in the new zone but officials of the company refused for the time being to divulge development plans. Several locations are expected to get under way during the next week as opponents of the extension confer with their lawyers in an attempt to decide what further action may be taken. It is probable that early attempts will be made to extend the unrestricted zone westward from the present lines.



Map showing recently extended Oklahoma City drilling zone.

Seek to Extend Texas Market Demand Law

Austin, Texas.—Representative Albert Walker of Vernon has introduced a bill in the Texas Legislature extending the life of the present market demand law indefinitely.

This is the first measure on this subject that has been introduced. Advocates of the market demand program have prepared an extended bill that they planned to introduce. Because of their inability to agree, the bill has been delayed until it now is too late to be passed in this session of the legislature.

Despite the fact that Governor James V. Allred is known to oppose any effort to curtail production on this basis, it is significant that three House members from the governor's home district signed the bill with Walker, who lives nearby.

The present law expires in September of this year. This subject was dealt with extensively last week in THE OIL WEEKLY, March 4, 1935, in an article prepared by A. W. Walker, professor of oil and gas law at the University of Texas and recognized nationally as an authority on this subject.

Oklahoma Production Tax Bill Is Changed

Oklahoma City.—In a scene of wild disorder the Oklahoma senate on Thursday afternoon, March 7, voted 39 to 0 for a four percent gross production tax to supplant the eight percent voted by the house and against which Oklahoma oil men have waged a bitter battle for more than two weeks. Senator H. M. Curnutt, Barnsdall, Oklahoma, bitterly complained he had been denied the right to be heard and on two occasions in a sharp interchange of words refused to yield the floor to the senate president, Lieutenant Governor James E. Berry. Senator John D. Pugh of Anadarko denounced conference committee work when he charged that committees were without authority changing the sense of bill passed by the senate and house. Many of the senators who could be contacted felt that the ultimate outcome would be a five percent tax since the house has insisted it will not consider anything less than six percent but probably cannot obtain enough votes to put over the emergency clause.

The senate bill makes major changes in the distribution of gross production tax which is expected to exceed $7,000,000 annually under the four percent rate. Seventy-eight percent would go to the state's general revenue fund, as compared to the 66 2/3 percent now received; 20 percent would go to the county in which the oil was produced compared to the present allocation of 16 2/3 percent; and two percent would go to the tax commission for enforcement purposes. Curnutt made repeated attempts to limit operation of the new bill to June 30, 1936, at which time he proposed to return to the present rate of three percent which yielded more than $4,500,000 in 1934. The bill was returned to the house and expected to go from there to a joint committee.

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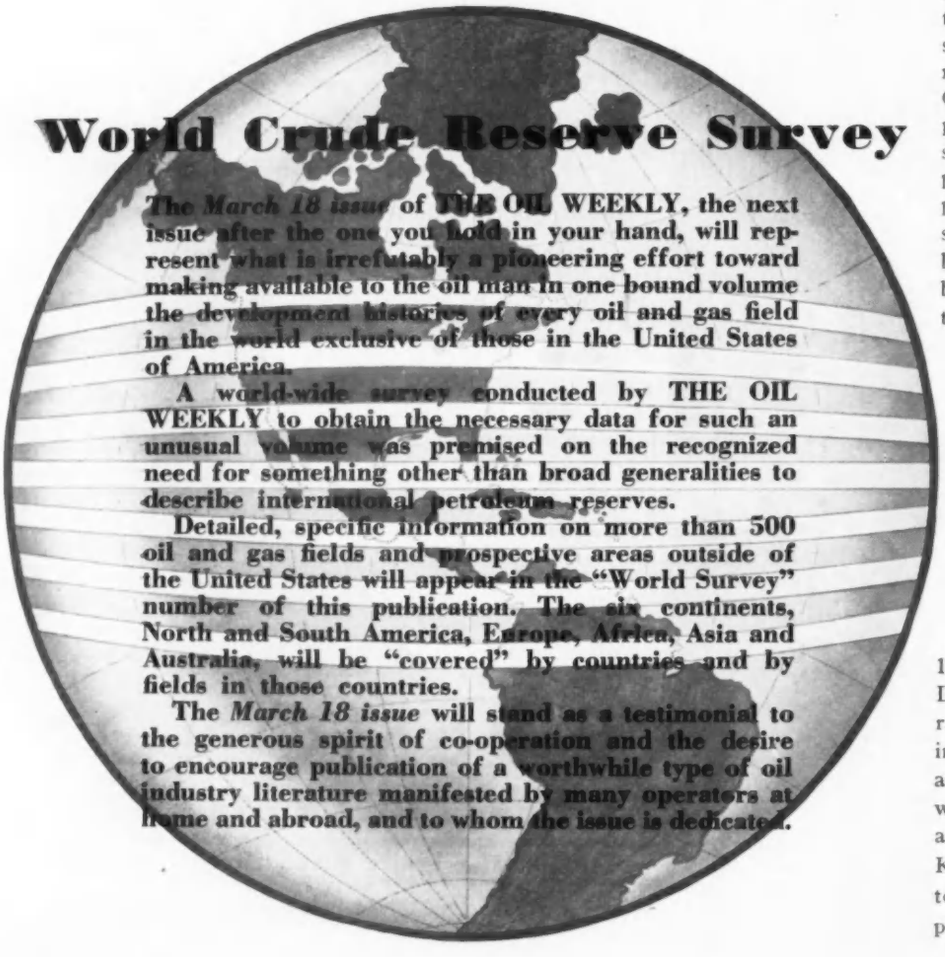
East Texas Bottom-Hole Pressure Near Low Level

Tyler.—An average bottom-hole pressure decline of six pounds during February was recorded by the East Texas field, according to the co-operative monthly survey conducted by engineers. The weighted average reservoir pressure for the entire producing structure was placed at 1221 pounds on March 1, or within one pound of the record low level of 1220 pounds reached on November 1, 1934, following the withdrawal of approximately 16,041,260 barrels of oil the previous month.

Curtailment of illegal production to a low level between October 25 and January 7, representing the first period that the Federal tender board had jurisdiction, was accompanied by a rise in the reservoir pressure to 1221 pounds on December 1, and to 1231 pounds on January 1. The removal of the Federal board by court order was followed by a sharp gain in hot oil activities, as reflected by the average pressure dropping to 1227 pounds, or a four-pound loss on the February 1 reading. Re-instatement of the Federal tender board on March 2 under the authority of a special act of Congress has again diminished the volume of illegal production originating in the field. The field is not likely to reflect this renewed curtailment through improving in bottom-hole pressure as the state tender board virtually covered the same ground during most of February in holding interstate shipments of contraband products via tank cars at low level.

Approximately 300 key wells spotted at uniform intervals over the entire field are used each month by members of the East Texas Engineering Association in arriving at their estimate on the bottom-hole pressure. All readings are corrected to a subsea depth of 3300 feet. Reports indicate that a number of areas registered major declines during the short month of February even though removed from known proration violators. Unless proration rules run afoul adverse court decision, operators are anticipating less fluctuation in the trend of the bottom-hole pressure, but are generally in accord that moderate declines will follow for the next few months. Allowable production of the field has been built up from 423,469 barrels daily from 15,514 wells on January 1, 1935, to 442,693 barrels daily from 16,211 wells, with every indication that this rate of increase will be sustained throughout the first six months of the year.



World Crude Reserve Survey

The *March 18 issue* of THE OIL WEEKLY, the next issue after the one you hold in your hand, will represent what is irrefutably a pioneering effort toward making available to the oil man in one bound volume the development histories of every oil and gas field in the world exclusive of those in the United States of America.

A world-wide survey conducted by THE OIL WEEKLY to obtain the necessary data for such an unusual volume was premised on the recognized need for something other than broad generalities to describe international petroleum reserves.

Detailed, specific information on more than 500 oil and gas fields and prospective areas outside of the United States will appear in the "World Survey" number of this publication. The six continents, North and South America, Europe, Africa, Asia and Australia, will be "covered" by countries and by fields in those countries.

The *March 18 issue* will stand as a testimonial to the generous spirit of co-operation and the desire to encourage publication of a worthwhile type of oil industry literature manifested by many operators at home and abroad, and to whom the issue is dedicated.

To Build 250-Mile Gasoline Pipe Line

Enid, Oklahoma.—Mid-Continent refiners will soon have a third major gasoline pipe line connecting refining centers of Kansas and Oklahoma with the consuming centers of the northern middle west, according to H. H. Champlin, president of Champlin Refining Company and Cimarron Valley Pipe Line Company which is to build the line from here to Superior, Nebraska. This is an airline distance of approximately 250 miles, which will be traversed by a 6⅝-inch seamless welded line with pump stations initially here and at Hutchinson, Kansas. Rail and truck distribution plants will be constructed at Hutchinson and at the terminus which lies within 100 miles of Omaha. Right-of-way now is being purchased and construction work is scheduled to get under way as soon as possible. According to Champlin some pipe from the company's well reserve stock will be put into the line and labor will be done as nearly as possible by men who now are in the employ of the company or who have been let out during the depression.

The line will traverse a rather flat country and engineering problems will be few. Several major stream crossings must be made. It is not known whether other refiners will join Champlin in the venture but its location would be advantageous to the use of Eason Oil Company with a 5000-barrel plant at Enid; Globe Oil & Refining Company with a 10,000-barrel plant at McPherson; Derby Oil Company with an 8000-barrel plant at Wichita; Barnsdall Refining Company with a 5000-barrel plant at Wichita; Dickey Refining Company with a 5000-barrel plant at McPherson; and to some of the smaller plants in Kansas. Cost of the line is estimated to exceed $1,000,000. The Champlin plant at Enid is rated at 16,000 barrels.

Compromise Texas Gas Waste Bill Is Prepared

Austin, Texas.—A subcommittee to the House Committee on Oil, Gas and Mining last week had prepared a compromise bill to control waste of gas in the Panhandle which it proposed to offer to the committee.

The revised measure contains most of the important features of the two bills introduced, but eliminates radical phases which would have not permitted passage of the others.

Members of the subcommittee were not of one mind on the question, however, and expected to offer amendments to the bill either in committee or when the measure is brought out on the floor.

Through a provision requiring that no gas shall be blown into the air, the bill would eliminate waste of this nature entirety. No sweet gas is to be used for purposes other than light and fuel, and after processing, sour gas must be converted into carbon black or some other useful substance.

Either type of gas may be produced and stripped if the residue is repressured to the producing formation.

As drafted, the measure would not apply to gas produced in conjunction with oil, since it applies to gas wells only, and defines as oil wells those which produce both gas and oil where the gas-oil ratio does not exceed 25000/1.

Operators may enter into permissive agreements to cooperate in the development of their leases or marketing their production, providing these agreements have the approval of the state attorney general.

The bill would require potential tests of every gas well in the state during April and August of each year.

The act also would empower the Railroad Commission to allocate production between wells in a given field, requiring exchange of connections whenever this was essential to bring about an equitable allocation.

In fields that produce both sweet and sour gas, the commission is instructed to determine the relative areas occupied by each. Proration must then be made of both classes of gas, in the proportion that each. Proration must then be made of place. These orders would be designed to operate in such a way as to prevent the migration of one class of gas into that portion of the reservoir occupied by the other.

Producers may refuse to deliver gas unless the price offered is reasonable. If a price is not agreed upon, the commission would be empowered to establish the price to be paid. If this arrangement is not satisfactory to the producer, the commission may allocate his share of the production to other producers.

One of the most important sections in the bill provides that if any of the sections requiring ratable taking or ratable purchase of gas is held void by the courts as the result of any attack on this law, then the entire statute shall be held void.

This section is intended to protect independent operators from attacks on this phase of the law by the major gas companies operating in the Panhandle area.

Penalties of $1000 per day would be provided for violations of the provisions of the act.

"Midnight" Injunction Bill Becomes Effective

Austin, Texas.—A new law intended to eliminate "midnight" injunctions against the Texas Railroad Commission became effective on March 6, when signed by Governor James V. Allred.

The bill is expected to relieve the commission from the series of injunctions, hastily granted by district courts, which has for several years hampered the enforcement of the proration laws in the state.

The law provides that no form of injunctive relief against the Railroad Commission shall be granted in any district court until after five days' notice to the commission and a hearing is held.

Either party may appeal from a decision of the trial court, such appeal taking precedence in the appellate courts over all cases of a different nature.

Appeals to the Supreme Court are advanced on the docket in a similar manner to insure the earliest decisions possible.

The higher courts are empowered specifically to issue writs of prohibition or mandamus any district judge who disregards the provisions of the statutes.

The measure was advocated by Attorney General McCraw, who has encountered the same difficulty in opposing suits of this nature as did Governor Allred at the time he held the post of attorney general.

Committee Favors Labor Representation

Washington, D. C.—The House Labor Committee this week made a favorable report on the bill sponsored by Representative Connery of Massachusetts, providing for the equal representation of labor on all code authorities.

The decision followed the closing of hearings at which labor representatives alleged that many of the difficulties in which several industries now find themselves could have been avoided if labor had been given a voice in enforcement of the codes.

It was charged during the hearings that in many instances the code authorities made little or no effort to enforce the labor provisions of the recovery agreements, with the result that wage-cutting by some of the members had driven the entire industry into ruinous price competition.

New Market Demand Bill Rewrites Statutes

Austin, Texas, March 11.—The new market demand bill, which completely rewrites the Texas oil and gas conservation statutes, had been prepared and was being circulated for signatures in the House of Representatives of the Texas Legislature Friday. The principal purpose of the bill is to extend the present market demand law, which expires in September, to September 1, 1937.

The authors of the bill, however, have attempted to correct discrepancies in other conservation laws beside Title 102, for which the proposed bill would be a substitute. There have been several supplementary laws enacted since this law became effective, and the new bill will attempt to correct and consolidate various phases of these amendatory enactments. Criminal offenses are not included, it seeming advisable to the authors to treat subjects of this nature in a separate act. The bill provides that there shall be no storage of oil in open pits, which has been one of the most difficult enforcement problems faced by the Texas Railroad Commission. One of the most important changes is a provision that records and reports required under House Bill 99 shall be public records open to the inspection of all. It is believed that in Senate Bill 21, which

(Continued on page 48)

MEN IN THE INDUSTRY'S NEWS

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T. M. EGAN, with Stewart Egan Oil Company, Oklahoma City, Oklahoma, was in South Texas last week on company business. The company has commenced a well near Cuero, in DeWitt County, and has other development work planned for the territory. W. J. Wellman, Cuero, Texas, is the South Texas representative.

O. W. KILLAM, independent producer of Laredo, Texas, and family spent several days at the Mardi Gras in New Orleans, Louisiana.

H. L. "LES" STEGALL, scout for Shell Petroleum Corporation, is being transferred from Tyler, Texas, to the Houston office, where he will be connected with the Houston scouting department of the company.

J. B. O'CONNOR, sales manager of Clark Bros. Company, has just returned to his headquarters at Olean, New York, after a three weeks tour of the oil districts of Louisiana, Texas, and Oklahoma.

DR. W. R. BEDINGFIELD, of Augusta, Georgia, of Motes & Bedingfield, was in South Texas last week to inspect the concern's producing properties in the Jacob field, McMullen County. L. L. Motes, San Antonio, is the other member of the firm.

T. V. MOORE of Humble Oil & Refining Company, Houston, was the featured speaker at the weekly meeting of the Houston Geological Society, held Thursday night, March 7. He discussed "Water Drive in the East Texas Field."

CARL O. JENSEN, who had been connected with American Iron & Machine Works Company of Oklahoma City for seven years, five years of which was in California, as special sales representative, died February 22 and burial was at Long Beach, California.

W. E. FUSSELL, superintendent of production for International Petroleum Corporation, Fort Worth, has been transferred from East Texas to Pampa, Texas, to take charge of producing properties recently acquired by the company in Gray and Hutchinson counties. The company is reported to be negotiating for the purchase of additional properties in the Texas Panhandle.

JOSEPH M. DAWSON, Southwest Texas geologist for Gulf Production Company, has been elected president of the San Antonio Geological Society for the 1935-36 term. Mr. Dawson succeeds T. J. Gailbraith, the California Company's geologist for the same territory. The election was held at the San Antonio Petro-

JOSEPH M. DAWSON

leum Club March 4. The other new officers are: Phillip O. Schoenick, Atlantic Oil Producing Company, Laredo, vice president; Adolph Dovre, Tide Water Oil Company, San Antonio, secretary and treasurer; and Ira O. Brown, Marathon Oil Company, San Antonio, member of the executive committee. R. F. Schoolfield, Duval Oil Corporation, San Antonio, and Thornton Davis, Simms Oil Company, San Antonio, were nominated for the position of district business representative of the San Antonio division of the American Association of Petroleum Geologists for the years 1935-1937. They will be elected by ballots to be mailed to the local secretary.

FRANK M. JACOBSON, manager of Buffalo Oil Company, Tulsa, was married to Miss Josephine Clary, Fort Worth, in the latter city on March 4. Following a honeymoon in Southwest Texas the couple will make their home in Tulsa. Jacobson was formerly chief clerk in the Fort Worth production division of Continental Oil Company.

FRANK BRAMAN, manager of the Tulsa office of National Tube Company, has spent the past two weeks in Kansas City, Missouri, where he underwent a minor operation.

L. D. WOSK, formerly a member of the United States Bureau of Mines and subsequently in the geological departments of Shell Petroleum Corporation and White Eagle Oil Corporation, spent the early part of the week in Tulsa. Wosk is now a consulting geologist and engineer with headquarters at 507 Commonwealth Building, San Diego, California.

S. L. STENTZ, A. M. Byers Company of Pittsburgh, Pennsylvania, has been transferred from the Pacific Coast to Tulsa, where he succeeds D. O. Johnson, now with S. M. Jones Company.

W. A. SLATOR, Alfred W. Stein and David V. Heibert have formed Exportation Petroleum Corporation, offices in Luling, Texas.

SAM HUGHSTON and associates have formed Hughston Oil Company and have established offices in Brownsville.

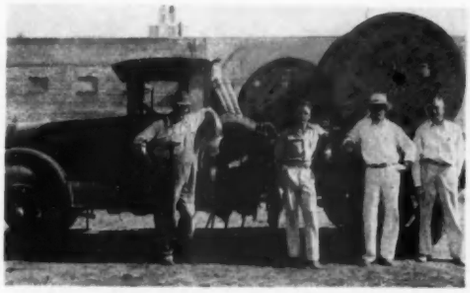
D. A. SIKES, district sales manager for Baroid Sales Company, has been transferred from Oklahoma City to Tulsa, where he will establish Oklahoma headquarters.

ARCH CAMPBELL, Tulsa district representative for Waukesha Motor Company of Waukesha, Wisconsin, has returned to the general headquarters for a sales conference.

A. C. TEMMELL, sales engineer for National Tube Company in the Tulsa area, spent the week visiting the active fields of the Mid-Continent area.

M. F. WHITEHILL, JR., driller of the discovery well in Gladwin County, Michigan, died in the Mayo Clinic, Rochester, Minnesota, February 28. He was born July 7, 1893, and shortly after the World War became associated with his father in the oil business.

Bridgeport Service



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PAMPA YARDS: Large quantity 5-3/16-in., 17-lb. and 20-lb. Used Lapweld Casing. Good quality. Fair price. Also large quantities all other sizes good casing up to 20-inch.

Special weights of National Tube A.P.I. Seamless Casing suitable for Panhandle work at money saving price: 7-in. O.D., 22-lb.; 8¼-in., 28-lb; 10-in. 35-lb. and 15½-in., 55-lb. Better quality than average used lapweld casing of greater weight at prices that compare with that of used casing.

25,000-feet, 2½-inch, 11½-thread excellent quality used Line Pipe. Every joint is first class. This is an exceptionally fine lot of pipe.

KILGORE: One 7-in. O.D. Heavy Jaw Type Bovaird Used Casing Elevator with 9-in. Slips and set of 7-in. O.D. and 6⅝-in. O.D. Slips. Price only $75.00.

Attractive price on large quantity of 5-3/16-inch 17-lb. and 20-lb. used Lapweld Casing of good quality. Ample stocks of 7-in., O.D. 20-lb., 24-lb. and 26-lb. Lapweld Casing. 10-in., and 12½-in. surface pipe.

ALL TEXAS STORES: Complete rental stocks including Casing Tools, Rotary and Cable Tools. Service Day or Night, Sunday and Holidays.

HOUSTON: Rebuilt and guaranteed 35-h.p., 4-cycle, "Superior" Gas Pumping Engine complete with standard equipment and Type C-11 Reversible Clutch. Good engine at attractive price. Can be moved anywhere.

Several miles of 2-inch, 2½-inch, 3-inch, and 4-inch, good quality used Line Pipe. Also several thousand feet of good 6⅝-inch O.D. 19.45-lb. used Line Pipe.

Two complete heavy duty Rotaries. Best of condition throughout. May be purchased complete or single units picked out. Phone LD-203 or Capitol 1301.

(3) 125-h.p., 300-lb. W. P. Kewanee Boilers complete with stacks, doors, handhole and manhole plates and Volcano Gas Burners. No better used boilers in Texas at the price.

DALLAS: Sales and Service Office under supervision of competent and experienced supply men. Equipment for delivery anywhere may be ordered through this office. Shipments made from our most convenient stocks. Telephone: LD-548, Local 2-4282.

WEST TEXAS: Swan Underreamers—sale, rental, repair parts—McCamey, Monahans, Breckenridge and Graham at Dunnigan Tool & Supply Company, our authorized underreamer representatives at points named.

OKLAHOMA

ADA: Most efficient and complete Drilling Mud Service in Mid-Continent. Competent engineer in the field to assist in securing the best results at the least cost. Services furnished without cost to user.

FITSTOWN: Bridgeport Drill Collars, Rotary Reamers and other Bridgeport Rotary Tools carried in stock by our distributor, the Carson Machine & Supply Company.

TULSA YARDS: Central distributing point for used Tubular Products of all kinds. Now on hand: Large quantity of good quality 5-3/16-inch, 13-lb., 11½-thread, Lapweld Casing; several miles of 2-inch, 3-inch, 4-inch and 6⅝-inch O.D. Used Line Pipe. Prompt delivery at attractive prices can be made to any Mid-Continent point.

TULSA OFFICE: Orders for new or used material of all kinds for delivery anywhere from our nearest stock receive prompt attention when placed through this office. This office is headquarters for used equipment buyer. Philcade Bldg., Phone 4-8580.

IMMEDIATE DELIVERY ON DRILL COLLARS ANYWHERE: 6¼-in., 8-in., 9-in., Bridgeport Forged Steel and Chrome Nickel Steel Drill Collars in 6-ft., 12-ft., 24-ft., and 30-ft. lengths carried in convenient stocks for prompt delivery to any section. Joint sizes and inside bores to accommodate all types of bits. Lengths longer than 30-feet furnished promptly on order. Delivery service is not confined to the vicinity of our stores. Deliveries to distant points made promptly.

OKLAHOMA CITY SPECIALS: Several hundred feet used 15½-inch, 70-lb., 8-thread, 9-inch collar Lapweld Casing.

Complete strings of Bridgeport 6⅝-inch O.D. Drill Pipe Casing—heavy, long pipe with new threads and collars. Recommended for both Rotary and Cable holes. Very attractive value.

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GENERAL OFFICE AND WORKS: WICHITA, KANSAS

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KANSAS

IMMEDIATE DELIVERY ON DRILL COLLARS ANYWHERE: 6¼-in., 8-in., and 9-in., Bridgeport Forged Steel and Chrome Nickel Steel Drill Collars in 6-ft., 12-ft., 24-ft., and 30-ft. lengths carried in convenient stocks for prompt delivery to any section. Joint sizes and inside bores to accomodate all types of bits. Lengths longer than 30-foot furnished promptly on order. Delivery service is not confined to the vicinity of our stores. Deliveries to distant points made promptly.

WICHITA SPECIALS: 7½-inch Roller Bearing Ideal Draw Works complete with steel jack posts, steel chain guards, steel header boards, regular cathead and steel braces. Guaranteed to be in A-1 condition in every respect.

40-h.p., 2-cycle, Type M Weber Gas Pumping Engine complete with flywheels, roller bearing type reversible clutch; and 16-inch x 16-inch diameter belt pulley. Completely overhauled and guaranteed.

(1) 90-h.p., Model 43, Fairbanks-Morse Portable Diesel Power Unit with O.C.S. Countershaft Clutches, Air Starter and Fuel Tank. Engine rebuilt in our shops. Guaranteed to be in first class operating condition.

(3) Strings Used 3-inch External Upset 10-thread Seamless Tubing. Good quality and attractive price.

12x12 Ideal Ajax Twin Cylinder Rotary Drilling Engine on Steel Skids. Excellent condition—looks and runs like new. Completely overhauled in our shops and guaranteed.

8-Inch Model A, "Johnson" Draw Works now being Unitized in Wichita shops. First class in every respect. Will be ready for delivery in short while. Can be moved anywhere.

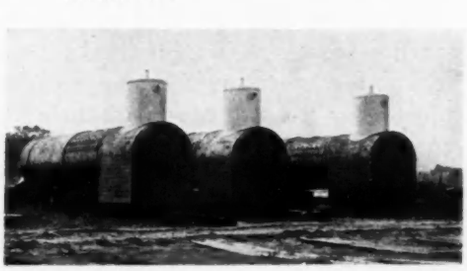
Three strings 7-Inch O.D., 24-Lb. Lapweld Casing ready for delivery from yards. This is first class pipe in every respect and is offered at very reasonable price compared to present markets.

AT CHASE: Rebuilt 12x12 Acme Drilling Engine complete with out-board bearing, balance wheel and rims. As good as new engine. Special price.

AT RUSSELL: Exceptionally attractive value: almost new 20-inch, 8-thread, Texas Pattern Casing Shoe. Can't tell this from new and price offers a saving of $35.00. One each on hand at Russell and Wichita.

AT McPHERSON: 10-inch Butler Casing Elevator. 8⅝-inch high bowl. OS Cement Bracket. 2½x98-inch links. 10x10x10¼; 10x8¼x12; 10x7x10¾; and 10x5-3/16x12-in. slips. Good as new. Saving of ⅓ price of new.

WESTERN KANSAS: Completely stocked store and yards at Russell which has served that territory many years. Complete stock of Swan Underreamers and Rental Tools of all kinds. Day and Night Service. Phone: 434.



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DR. W. R. **BEDINGFIELD**, of Augusta, Georgia, of *Moses & Bedingfield*, was in South Texas last week to inspect the concern's producing properties in the Jacob field, McMullen County. L. L. Moses, San Antonio, is the other member of the firm.

T. V. **MOORE** of Humble Oil & Refining Company, Houston, was the featured speaker at the weekly meeting of the Houston Geological Society, held Thursday night, March 7. He discussed "Water Drive in the East Texas Field."

CARL O. **JENSEN**, who had been connected with American Iron & Machine Works Company of Oklahoma City for seven years, five years of which was in California, as special sales representative, died February 22 and burial was at Long Beach, California.

W. E. **FUSSELL**, superintendent of production for International Petroleum Corporation, Fort Worth, has been transferred from East Texas to Pampa, Texas, to take charge of producing properties recently acquired by the company in Gray and Hutchinson counties. The company is reported to be negotiating for the purchase of additional properties in the Texas Panhandle.

JOSEPH M. **DAWSON**, Southwest Texas geologist for Gulf Production Company, has been elected president of the San Antonio Geological Society for the 1935-36 term. Mr. Dawson succeeds T. J. Galbraith, the California Company's geologist for the same territory. The election was held at the San Antonio Petro-

JOSEPH M. DAWSON

leum Club March 4. The other new officers are: Philip O. Schoenick, Atlantic Oil Producing Company, Laredo, vice president; Adolph Dovre, Tide Water Oil Company, San Antonio, secretary and treasurer; and Ira O. Brown, Marathon Oil Company, San Antonio, member of the executive committee. R. F. Schoolfield, Duval Oil Corporation, San Antonio, and Thornton Davis, Simms Oil Company, San Antonio, were nominated for the position of district business representative of the San Antonio division of the American Association of Petroleum Geologists for the years 1935-1937. They will be elected by ballots to be mailed to the local secretary.

FRANK M. **JACOBSON**, manager of Buffalo Oil Company, Tulsa, was married to Miss Josephine Clary, Fort Worth, in the latter city on March 4. Following a honeymoon in Southwest Texas the couple will make their home in Tulsa. Jacobson was formerly chief clerk in the Fort Worth production division of Continental Oil Company.

FRANK **BRAMAN**, manager of the Tulsa office of National Tube Company, has spent the past two weeks in Kansas City, Missouri, where he underwent a minor operation.

L. D. **WOSK**, formerly a member of the United States Bureau of Mines and subsequently in the geological department of Shell Petroleum Corporation and White Eagle Oil Corporation, spent the early part of the week in Tulsa. Wosk is now a consulting geologist and engineer with headquarters at 507 Commonwealth Building, San Diego, California.

S. L. **STENTZ**, A. M. Byers Company of Pittsburgh, Pennsylvania, has been transferred from the Pacific Coast to Tulsa, where he succeeds D. O. Johnson, now with S. M. Jones Company.

W. A. **SLATOR**, Alfred W. Stern and David V. Heibert have formed Exportation Petroleum Corporation, offices in Luling, Texas.

SAM **HUGHSTON** and associates have formed Hughston Oil Company and have established offices in Brownsville.

D. A. **SIKES**, district sales manager for Baroid Sales Company, has been transferred from Oklahoma City to Tulsa, where he will establish Oklahoma headquarters.

ARCH **CAMPBELL**, Tulsa district representative for Waukesha Motor Company of Waukesha, Wisconsin, has returned to the general headquarters for a sales conference.

A. C. **TEMMELL**, sales engineer for National Tube Company in the Tulsa area, spent the week visiting the active fields of the Mid-Continent area.

M. F. **WHITEHILL, JR.**, driller of the discovery well in Gladwin County, Michigan, died in the Mayo Clinic, Rochester, Minnesota, February 28. He was born July 7, 1895, and shortly after the World War became associated with his father in the oil business.

Bridgeport Service

ANYWHERE

While our Stores and Yards are located in the active fields of Texas, Oklahoma and Kansas, our service and equipment is available throughout the world.

A complete Supply Service—Manufacturing—Rentals—Sales—Rotary and Cable—Pumping and Production Equipment.

TEXAS

PAMPA YARDS: Large quantity 5-3/16-in., 17-lb. and 20-lb. Used Lapweld Casing. Good quality. Fair price. Also large quantities all other sizes good casing up to 20-inch.

Special weights of National Tube A.P.I. Seamless Casing suitable for Panhandle work at money saving price: 7-in. O.D., 22-lb., 6⅝-in., 24-lb; 10-in. 35-lb. and 15⅛-in., 55-lb. Better quality than average used lapweld casing of greater weight at prices that compare with that of used casing.

26,000-feet, 2½-inch, 11½-thread excellent quality used Line Pipe. Every joint is first class. This is an exceptionally fine lot of pipe.

KILGORE: One 7-in. O.D. Heavy Jaw Type Bowaird Used Casing Elevator with 9-in. Slips and set of 7-in. O.D. and 6⅝-in. O.D. Slips. Price only $75.00.

Attractive price on large quantity of 5-3/16-inch 17-lb. and 20-lb. used Lapweld Casing of good quality. Ample stocks of 7-in., O.D. 20-lb., 24-lb. and 26-lb. Lapweld Casing. 10-in., and 12¾-in. surface pipe.

ALL TEXAS STORES: Complete rental stocks including Casing Tools, Rotary and Cable Tools. Service Day or Night, Sunday and Holidays.

HOUSTON: Rebuilt and guaranteed 35-h.p., 4-cycle, "Superior" Gas Pumping Engine complete with standard equipment and Type C-11 Reversible Clutch. Good engine at attractive price. Can be moved anywhere.

Several miles of 2-inch, 2½-inch, 3-inch, and 4-inch, good quality used Line Pipe. Also several thousand feet of good 9⅝-inch O.D. 19.45-lb. used Line Pipe.

Two **complete heavy duty Boilers.** Best of condition throughout. May be purchased complete or single units picked out. Phone LD-203 or Capitol 1301.

(3) **125-h.p., 300-lb. W. P. Kewanee Boilers** complete with stacks, doors, handhole and manhole plates and Volcano Gas Burners. No better used boilers in Texas at the price.

DALLAS: Sales and Service Office under supervision of competent and experienced supply men. Equipment for delivery anywhere may be ordered through this office. Shipments made from our most convenient stocks. Telephone LD-845, Local 3-4252.

WEST TEXAS: Swan Underreamers—sale, rental, repair parts—McCamey, Monahans, Breckenridge and Graham at Dunnigan Tool & Supply Company, our authorized underreamer representatives at points named.

OKLAHOMA

ADA: Most efficient and complete Drilling Mud Service in Mid-Continent. Competent engineer in the field to assist in securing the best results at the least cost. Services furnished without cost to user.

FITTSTOWN: Bridgeport Drill Collars, Rotary Reamers and other Bridgeport Rotary Tools carried in stock by our distributor, the Carson Machine & Supply Company.

TULSA YARDS: Central distributing point for used Tubular Products of all kinds. Now on hand: Large quantity of good quality 5-3/16-inch, 13-lb., 11½-thread, Lapweld Casing; several miles of 2-inch, 3-inch, 4-inch and 6⅝-inch O.D. Used Line Pipe. Prompt delivery at attractive prices can be made to any Mid-Continent point.

TULSA OFFICE: Orders for new or used material of all kinds for delivery anywhere from our nearest stock receive prompt attention when placed through this office. This office is headquarters for used equipment buyer. Philcade Bldg. Phone 4-5581.

IMMEDIATE DELIVERY ON DRILL COLLARS ANYWHERE: 6¼-in., 8-in., 9-in. Bridgeport Forged Steel and Chrome Nickel Steel Drill Collars in 9-ft., 13-ft., 24-ft., and 30-ft. lengths carried in convenient stocks for prompt delivery to any section. Joint sizes and inside bores to accommodate all types of bits. Lengths longer than 30-feet furnished promptly to order. Delivery service is not confined to the vicinity of our stores. Deliveries to distant points made promptly.

OKLAHOMA CITY SPECIALS: Several hundred feet used 15⅝-inch, 70-lb., 8-thread 9-inch collar Lapweld Casing.

Complete strings of Bridgeport 6⅝-inch O.D. Drill Pipe Casing—heavy, long pipe with new threads and collars. Recommended for both Rotary and Cable tools. Very attractive value.

KANSAS

IMMEDIATE DELIVERY ON DRILL COLLARS ANYWHERE: 6¼-in., 8-in. and 9-in. Bridgeport Forged Steel and Chrome Nickel Steel Drill Collars in 9-ft., 13-ft., 24-ft., and 30-ft. lengths carried in convenient stocks for prompt delivery to any section. Joint sizes and inside bores to accommodate all types of bits. Lengths longer than 30-feet furnished promptly to order. Delivery service is not confined to the vicinity of our stores. Deliveries to distant points made promptly.

WICHITA SPECIAL: [illegible] the last few [illegible] complete with [illegible] jack post, steel sub, [illegible] board, engine [illegible] guaranteed to [illegible] A-1 condition in every respect.

40-h.p., 2-speed, [illegible] Heavy Duty Pumping Engine complete with [illegible] mounted type reversible clutch and 15-in. diameter [illegible] overhaul and guarantee.

(1) 80-h.p., 2-speed, [illegible] Enterprise Engine [illegible] Lever Reversible Clutch, [illegible] Gardner 2-speed [illegible] Tank, Engine [illegible] and [illegible] drive.

(2) [illegible] Lot 3-in. Kewanee Type [illegible] Seamless Steel [illegible] attractive [illegible]

[illegible] 7-inch, Type [illegible] Lapweld Casing [illegible] Lap—one [illegible] overhaul [illegible]

[illegible] 4-inch [illegible] Lapweld [illegible] Casing. Ample [illegible] Utility [illegible] Pipe [illegible] Casing [illegible] driven [illegible] wire.

[illegible] 2-in. [illegible] 24-ft. [illegible] Casing [illegible]

[illegible] CHAS. [illegible]

[illegible] CASING [illegible]

[illegible] CASING [illegible]

BRIDGEPORT MACHINE COMPANY
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OIL DRILLING, FISHING AND PRODUCING EQUIPMENT
GENERAL OFFICES AND WORKS: WICHITA, KANSAS

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REVIEW OF THE »

Reserves Represented by the Under Proration

IN a boxed comment appearing with an article published in The OIL WEEKLY, April 3, 1933, it was stated "Eventually, it is to be hoped, general conditions will so right themselves that oil can be produced purely upon a basis of cheapest ultimate yield without regard to demands of the moment. At that time the problem of open or retarded operations should be solved."

This time is gradually approaching, perhaps, more rapidly than many realize. Therefore, it is of interest to sum up briefly the basic data and opinions applying to the principal sources of production that have been affected by the past four or five years of restricted operation. By comparing our ideas of the past with those of the present time, in the light of better knowledge, we are in an improved position to arrive at a more definite and enlightened method of operation for the future.

Without question, reserves in the large restricted fields have been over-estimated. The conditions of operation did not make it easy to arrive at even approximately reasonable reserve estimates, but now that there is a better outlook than for sometime, these estimates can be examined more critically than in the past, and without so much fear of stimulating wildcatting beyond a safe point.

THE first serious suggestion made regarding the handling of oil-field operations on a unitized basis, of which the writer has any knowledge, is that of W. F. McMurray and J. O. Lewis,[1] whose comments were as follows:

"The maximum usefulness could be derived from a pool of oil or gas by it being controlled by one competent management, as under such conditions it could be developed with the least waste and at the smallest cost . . . To get the best results the operators should act in unison for the protection of their common sources of supply and for their mutual benefit."

At the annual convention of the American Petroleum Institute at St. Louis, in December, 1923, H. L. Doherty proposed:

"That we make such changes in the basic methods of producing crude oil that the raw product will be located in vast quantities and blocked out in large amounts so as to be readily accessible and under conditions whereby it will not have to be forced upon the market in excess of what the market can absorb."

In 1923 Doherty proposed that unit operations[2] be adopted in opening up a new pool, and it appears that he had worked out definite ideas for handling unit operations about this time, or shortly afterward on what seemed to be a practicaly basis, as may be noted in application made in 1925 for patent, one claim of which is described as follows:[3]

"A method of extracting oil from a virgin oil field comprising treating the field as a unit, providing one or more wells which penetrate the oil body underlying the field and through which the oil may flow to the surface, maintaining the field under substantially its original high gas pressure while removing oil through said wells, holding a back-pressure on the wells below but approximating the gas pressure in the field, and compensating for the gas withdrawn from the field with the oil by introducing an equivalent amount of gas into the field."

This method, or a modification of this method, is being employed in a few unitized operations at the present time. In addition to the method mentioned Doherty has covered by patents[4] other methods in connection with unit operation.

In 1927, the writer suggested the method of returning the gas under high pressure to the reservoir in the early life of the field[5], but after observing several operations in subsequent years, formed the opinion that the method was somewhat selective as to the type of field in which it could be successfully employed.

C. S. Corbett, in 1929, proposed a method[6] for handling a unit operation, in which the gas would be returned to the apex of the reservoir in the early life of the field. This method with certain modifications, is similar to that employed at

« S. F. SHAW
Consulting Engineer

Important Fields Operating and Unitization

An article in which basic data such as recovery to date, estimated ultimate yield, proved acres, well spacing, depth, bottom-hole pressures, prorated percentage, and other information is given on the outstanding fields of today. Has the industry over-estimated the future reserves represented by these fields?

Sugar Land[7] and at the Pendopo field[8] in Sumatra.

Comments on Fields in Which Unitized and Prorated Methods Are Employed

Among large foreign fields in which some form of unit operation has been carried out, there may be mentioned the following:

1. La Brea-Parinas, Peru.
2. Infantas-La Cira, Colombia.
3. Maidan-i-Naftun, Persia.
4. Pendopo, Sumatra.

La Brea-Parinas area was first opened in 1874 by the Peruvian Government. The concession was acquired by International Petroleum Company in 1914, since which time it has undergone extensive development, covering a productive area of about 13,500 acres. Cumulative production to the end of 1933 aggregates about 120,000,000 barrels. Gas has been returned to certain sections of the reservoir since 1927, and some of the areas have been affected from a period early in the life of the wells by the gas being injected. Since the entire area is operated by one company, there has been no difficulty in distributing the return gas to the sections where the results are most satisfacory. Thte total quantity of gas that has been injected into the various pools being operated by this company amounts to 38 billion cubic feet.

The Infantas-La Cira field, in Colombia, was opened to production in 1921, and up to the end of 1933 there had been produced about 132,000,000 barrels. The depth of wells ranges from 1000 to 3600 feet. Repressuring was started in 1928, and has become of increasing importance in succeeding years.

Production operations of Anglo-Persian Oil Company, Ltd., began in 1912 in the Maidan-i-Naftun area. The Masjid-i-Sulaiman producing unit "is an anticline some 20 miles in length by four miles in width, including three domes so far proved[9]." In 1927 it was stated:[10]

" . . . in the Masjid-i-Sulaiman field the oil-water level is constant and Anglo-Persian Oil Company is considering the possibility of introducing water at the base of the dome to flush the producing horizon. The rock pressure in the main field has been falling steadily until the last year, when the precautions taken by the Anglo-Persian have resulted in a marked flattening of the pressure-loss curve."

Inasmuch as all operations in the Persian field have been conducted by one company, the methods can be adapted to the problems encountered without reference to the effect on a neighboring property. In 1933, Sir John Cadman[11] stated:

"It will be appreciated that considerable operating advantages have resulted from the reinjection of products to the reservoir, notably increased flexibility in operations, and reduced needs for products tankage and refinery plant to meet peak requirements."

The pressure in the gas dome of the Masjid-i-Sulaiman field has only dropped five pounds per square inch, or approximately 1.0 percent, during the past four years, although a production of nearly 20,000,000 tons has been drawn from the field during this period.

In patent application 1899497, Doherty anticipated the method of introducing water at the base of the dome similar to that proposed by Anglo-Persian Oil Company, Ltd., as indicated by the following statement of claim:

"A method of extracting oil from a virgin oil field comprising treating the field as a unit, providing

MEN IN THE

[illegible] STEVENSON, land man for Mid-Continent Petroleum Corporation, has opened office in San Antonio. He is in charge of leasing operations for the company over the entire southern portion of Texas, extending from Brewster County to the Louisiana line. He also is in charge of lease operations in the East Texas area. He is from Houston. The company plans to later establish a scouting office at Houston and will enlarge the San Antonio office.

TOM EGAN, with Stewart Egan Oil Company, Oklahoma City, Oklahoma, was in South Texas last week on company business. The company has commenced a well near Cuero, in DeWitt County, and has other development work planned for the territory. W. J. Wellman, Cuero, Texas, is the South Texas representative.

OLIVER KELLAM, independent producer of Laredo, Texas, and family spent several days at the Mardi Gras in New Orleans, Louisiana.

HAL "LES" STEGALL, agent for Shell Petroleum Corporation, is being transferred from Tyler, Texas, to the Houston office, where he will be connected with the Houston scouting department of the company.

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JOSEPH [illegible]

[illegible] represented in the
[illegible] Other Parts

TABLE 3

Estimates of Ultimate Recovery from the Sugarland Field

Authority	Bbl. Ultimate Recovery	Reference
[illegible]	60,000,000 to 70,000,000	[illegible]
[illegible]	65,000,000	[illegible]

[illegible] recovery to the end of 1930 has been approximately [illegible] barrels.

to average between 40 and 50 per-cent water.

Sugar Land

In many respects, Sugar Land is the best existing example that has yet been tried of controlled production brought about by pressure maintenance. The field was opened in March, 1926, since which time there have been developed about 2000 acres of productive territory in which something over 60 wells have been drilled, making for an average spacing of about 32 acres per well. The depth to the producing horizon is about 3000 feet, and thickness of the productive zone is up to 200 feet, of which about 100 feet is considered as saturated.

Ultimate recovery from the Sugar Land field has been estimated as indicated in Table 3.

Gas injection for the purpose of maintaining the pressure was started in April, 1930, since which time practically all the gas produced with the oil has been returned to the reservoir with the exception of the gas required for fuel purposes. The data applying to gas injection in this field has been as shown in Table 4.

The following remarks indicate the anticipations in connection with the Sugar Land project:

"It is not thought that pumping of wells will be necessary in the Sugar Land field, and theoretically when all possible oil is produced the structure will remain practically a dry gas reservoir. Also, it is thought that the return of gas to the sand at practically the original field pressure, will retard or stop the intrusion of water until the oil is recovered and the operators start draining the remaining gas reservoir. With the slower reservoir pressure decline, the bottom-hole pressure will at all times be greater and the flowing life of the field extended probably throughout the entire production life. The pumping cost of a large volume of oil will be saved. It can be assumed that by slow pressure decline, the actual ultimate recovery will be increased materially."

Up to the time of the latest report on the operations in this field, the gas-oil ratio had not increased. Water has encroached at certain points although the extent of water intrusion is not supposed to be serious.

TABLE 4

Data on Pressure Maintenance Operations in the Sugarland Field

	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

Hobbs Field

The Hobbs field, New Mexico, was opened in June, 1928, in porous limestone at depth of about 4200 feet. The area considered as productive at the present time covers about 200 units of 40 acres each, or a total of about 8000 acres. The official potential at the present time is 2,106,278 barrels, and production is about 32,000 barrels per day.

Estimates on ultimate recovery are given in Table 5.

Owing to lack of market demand, the production has been held at a low point and in no month has it exceeded an average of 35,000 barrels per day of daily production. It was believed that highly restricted production brought about by closing in wells,

TABLE 5

Estimates on Ultimate Recovery from the Hobbs Field, New Mexico

Authority	Bbl. Ultimate Recovery	Reference
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

or by holding a high back-pressure, would lower the gas-oil ratio, retard the water encroachment and increase the ultimate recovery.

In the early part of 1931, a report was made by a group of production engineers in which it was stated that "water encroachment is not serious at this time, nor is it expected to be serious for a long time to come." In June, 1931, sulphur water began to make its appearance along the west side and has been steadily advancing along most of the west front. On October 31, 1931, there were 38 units of 40 acres producing water and on December 31, 1931, 52 units were classed as water units.

Gas caps also began forming and have been spreading, indicating that the production of oil at the rate of one to two percent of the official potential was too great to allow the water to advance sufficiently to maintain pressure,

one or more wells which penetrate the oil body underlying the field and through which oil may flow to the surface, maintaining a body of gas under pressure above the oil body, and compensating for the oil withdrawn from the field by introducing to the field below the oil an equivalent amount of water under pressure sufficient to maintain the upper oil level substantially constant."

The Pendopo field, in Sumatra, is being operated by N.K.P.M., a subsidiary of Standard Oil Company of New Jersey. In 1928, early in the life of the field, operations were started in returning to the reservoir a large percentage of the gas produced with the oil, and this work has continued to the present time.

"Wells have been drilled in accordance with the most advanced engineering practice, gas produced with the oil being processed to remove casing-head, after which the volume not needed for fuel in operating the lease is forced back into the sand. In this way the original pressure is maintained to a remarkable degree and it is believed that the major part of the recoverable oil will be produced without pumping or gas-lifting."[8]

No statistics are available as to the results obtained.

In the United States, important fields in which some phase of unitized or prorated operation has been employed are as follows:

	Discovered
1. Yates	October, 1926
2. Raccoon Bend	February, 1928
3. Sugar Land	March, 1928
4. Hobbs	June, 1928
5. Kettleman Hills	October, 1928
6. Oklahoma City	Dec., 1928
7. Darst Creek	July, 1929
8. Van	October, 1929
9. East Texas	December, 1930
10. Conroe	December, 1931

Yates Field

The oil of the Yates field is found in porous limestone. The area covers about 17,500 acres on which about 425 productive wells have been drilled, making for a spacing of approximately 40 acres to the well. The depth of the wells ranges from 900 to 1900 feet. Initial production ranges from a few hundred barrels to 205,000 barrels per day based on hourly, or short-period, gauges. The official potential of the field is about 5,000,000 barrels per day, but production is limited to 42,000 barrels per day, or about 100 barrels per well. During no month has the production averaged more than 130,000 barrels per day.

Ultimate recovery of the Yates field has been estimated by various authorities as in Table 1.

TABLE 1

Estimates of Ultimate Recovery from the Yates Field, Texas

Authority	Bbl. Ultimate Recovery	Reference
Hennen and Metcalf	640,000,000	Bull. A.A.P.G. Dec. 1929
R. W. Richmond	8,000,000,000	Nat. Pet. News. April 1, 1931
Anon.	604,000,000	Oil Gas Jour. Feb. 18, 1932
S. F. Shaw	3,300,000,000	The Oil Weekly April 3, 1933
J. R. Suman	599,783,000	The Oil Weekly May 28, 1934

Total production to the end of 1934 was approximately 195,000,000 barrels.

The leases are owned by several companies, among whom agreement has brought about a unit-operating program. Severe restriction in production permits the reservoir pressure to be maintained at a high point, and water advance seems to almost maintain the pressure. Under such conditions, the question of gas-oil ratio would seem to be an unimportant factor. Under 700 pounds pressure, it is possible to have 146 cubic feet of gas dissolved in one barrel of oil. Late in 1934, the average gas-oil ratio was reported as 246 cubic feet per barrel, which is a comparatively low figure. However, the petroleum engineed for the Yates Advisory Committee has repeatedly testified before the Railroad Commission that an increased allowable would result in a lower gas-oil ratio, and in a lower pressure decline per million barrels of oil produced. It also was discovered by tests that production at a higher rate usually resulted in a lower gas-oil ratio.[12]

Raccoon Bend

The Raccoon Bend field has been operated as a unit from the time of discovery of the field. The field was drilled in 1928-1932, penetrating a sand 18 to 25 feet in thickness. The Gotosky sand is found at 2900-3140 feet, and the Grawunder sand at 3250-3400 feet. Tests had shown that the pressures would vary from 400 to 1300 pounds when injecting gas. A description of the pressure-maintenance operations was made by G.H.L. Kent and George Reid[13] who stated that as a result of this work:

"A large quantity of gas has been retained in the formation which otherwise would have been lost as a lifting medium and at the same time would have allowed a more rapid decline of formation pressure, resulting in a lower ultimate yield."

Estimates of ultimate recovery from the two upper oil sands of the Raccoon Bend field have been as shown in Table 2.

TABLE 2

Estimates of Ultimate Recovery from the Raccoon Bend Field

Authority	Bbl. Ultimate Recovery	Reference
L. E. Smith	25,000,000 to 33,816,000	Nat. Pet. News April 20, 1932
Report to Secretary Interior	19,566,000	Pet. Reporter, Oct., 1934

Recovery to the end of 1934 has been approximately 13,5000,000 barrels.

Nearly all wells in the Raccoon Bend field have been placed on the beam, and production is supposed

TABLE 3

Estimates of Ultimate Recovery from the Sugarland Field

Authority	Bbl. Ultimate Recovery	Reference
L. E. Smith	60,000,000 to 70,000,000	Nat. Pet. News April 20, 1932
J. R. Suman	86,123,000	The Oil Weekly May 28, 1934

Production since recovery to the end of 1934 has been approximately 21,000,000 barrels.

to average between 40 and 50 percent water.

Sugar Land

In many respects, Sugar Land is the best existing example that has yet been tried of controlled production brought about by pressure maintenance. The field was opened in March, 1928, since which time there have been developed about 1370 acres of productive territory in which something over 60 wells have been drilled, making for an average spacing of about 22 acres per well. The depth to the producing horizon is about 3600 feet, and thickness of the productive zone is up to 200 feet, of which about 100 feet is considered as saturated.

Ultimate recovery from the Sugar Land field has been estimated as indicated in Table 3.

Gas injection for the purpose of maintaining the pressure was started in April, 1930, since which time practically all the gas produced with the oil has been returned to the reservoir with the exception of the gas required for fuel purposes. The data applying to gas injection in this field has been as shown in Table 4.

The following remarks indicate the anticipations in connection with the Sugar Land project[14 15]:

"It is not thought that pumping of wells will be necessary in the Sugar Land field, and theoretically when all possible oil is produced the structure will remain practically a dry gas reservoir. Also, it is thought that the return of gas to the sand at practically the original field pressure, will retard or stop the intrusion of water until the oil is recovered and the operators start draining the remaining gas reservoir. With the slower reservoir pressure decline, the bottom-hole pressure will at all times be greater and the flowing life of the field extended probably throughout the entire production life. The pumping cost of a large volume of oil will be saved. It can be assumed that by slow pressure decline, the actual ultimate recovery will be increased materially."

Up to the time of the latest report on the operations in this field, the gas-oil ratio had not increased. Water has encroached at certain points although the extent of water intrusion is not supposed to be serious.

TABLE 4

Data on Pressure Maintenance Operations in the Sugarland Pool

	November 1934	Since Repressuring April, 1930
Oil produced, bbls.	179,995	15,147,793
Gas produced, M. cubic feet	46,385	4,378,349
Gas injected, M. cubic feet	41,082	3,869,605
Percent gas returned	88.7	88.4
Produced gas-oil ratio, cubic feet/barrels	257	289
Injected gas-oil ratio, cubic feet/barrels	288	255
Net gas-oil ratio, cubic feet/barrels	29	34
Estimated original reservoir pressure		1570 lbs. per sq. in.
Reservoir pressure, April, 1930		1280 lbs. per sq. in.
Reservoir pressure, November, 1934		1380 lbs. per sq. in.

Hobbs Field

The Hobbs field, New Mexico, was opened in June, 1928, in porous limestone at depth of about 4200 feet. The area considered as productive at the present time covers about 202 units of 40 acres each, or a total of about 8000 acres. The official potential at the present time is 2,168,278 barrels, and production is about 32,000 barrels per day.

Estimates on ultimate recovery are given in Table 5.

Owing to lack of market demand, the production has been held at a low point and in no month has it exceeded an average of 35,000 barrels per day of daily production. It was believed that highly restricted production brought about by closing in wells, or by holding a high back-pressure, would lower the gas-oil ratio, retard the water encroachment and increase the ultimate recovery.

TABLE 5

Estimates on Ultimate Recovery from the Hobbs Field, New Mexico

Authority	Bbl. Ultimate Recovery	Reference
R. S. Christie	203,000,000	Trans. A.I.M.E. (1932) p. 346
L. E. Smith	100,000,000 to 150,000,000	Nat. Pet. News April 20, 1932
S. F. Shaw	100,000,000	The Oil Weekly April 3, 1933
E. Wahlstrom	125,000,000	The Oil Weekly April 24, 1933
Anon	100,000,000 to 125,000,000	The Oil Weekly August 31, 1933
J. R. Suman	175,000,000	The Oil Weekly May 28, 1934

In the early part of 1931, a report was made by a group of production engineers in which it was stated that "water encroachment is not serious at this time, nor is it expected to be serious for a long time to come." In June, 1931, sulphur water began to make its appearance along the west side and has been steadily advancing along most of the west front. On October 16, 1934, there were 30 units of 40 acres producing water, and on December 31, 1934, 35 units were classed as water units.

Gas caps also began forming, and have been spreading, indicating that the production of oil at the rate of one to two percent of the official potential was too great to allow the water to advance sufficiently to maintain pressure,

otherwise these gas caps could not have formed. On the other hand the withdrawal at one to two percent was too great to prevent edge-water advancement.

It has been found that up to a production rate that is far beyond the present allowable, there is no general increase in the gas-oil ratio except in the area of the gas caps.

Recovery from the Hobbs field since its discovery in 1928 to the end of 1934 has been approximately 60,000,000 barrels.

Kettleman Hills Field

The Kettleman Hills field was discovered in October, 1928. The producing horizon lies at a depth of 8000 to 9000 feet, and the productive acreage covers about 17,600 acres, on which some 69 wells have already been drilled, and development is continuing in a slow and orderly manner.

Gas-oil ratios in wells on the crest of the structure are very high, but on the flanks, the gas-oil ratios are much lower, being in the neighborhood of 1000 cubic feet per barrel.

Some water is reported to be encroaching on the edges, but the quantity so far is not supposed to be great.

Ultimate recovery has been estimated at from 1,000,000,000 to 1,500,000,000 barrels[16]. Recovery to the end of 1934 has been about 90,000,000 barrels.

Oklahoma City Field

The Oklahoma City field was discovered in December, 1928, at a depth of approximately 6500 feet. The productive thickness ranges from only a few feet to more than 200 feet. Initial productions have ranged from a few barrels per day to more than 100,000 barrels, based on four-hour potentials. The area covered is about 10,000 acres on which over 1100 wells have been drilled. The drilling density in the thicker and more productive Wilcox zone has averaged about six acres per well, and in one area of 160 acres the density averages slightly less than three acres per well.

The field has followed no unitized plan other than that brought about through proration, enforced by the State Corporation Commission. Until within the past year, official potentials were of such magnitude that the allowed production was only about two percent of the potential. At the present time, the allowable in the Simpson zone on some 418 producing wells is 100 percent. In the Wilcox zone with a potential of about 900,000 barrels per day the allowable for December, 1934, was 12½ percent.

Estimates on ultimate recovery are shown in Table 6.

In commenting on the production practice in 1932, D. R. Knowlton et al. state the following:[17]

"The limited amount of data available show the bottom-hole pressures are declining uniformly over the Wilcox sand area . . . This means that little of the oil will be trapped in the sand and the edge-water drive will be very efficient with a consequent high ultimate yield. The above mentioned gas wastage will not to any great extent cut down the ultimate yield as long as bottom-hole pressures remain locally uniform."

In 1934, Knowlton states the following as regards the sequence of events in this field.[18]

"Due to an unfortunate combination of natural conditions and state regulations, the Oklahoma City oil field has been produced in a manner that has resulted in large gas wastage and, consequently, rapid dissipation of reservoir pressure. . . . Since few of the wells were tubed, and the production practice was to flow the wells intermittently through casing, very unequal pressures existed within the reservoir. This method of production has contributed to a large extent in forming the gas cap along the eastern edge of the Wilcox sand."

The gas-oil ratios are fairly low at this time, except along the gas-cap edge. Reservoir pressures have declined to less than 400 pounds, but at this time the pressure decline curve has flattened out to some extent. As was to be expected water has encroached to a considerable extent on the west, or down-dip, side of the Wilcox zone.

Darst Creek

The Darst Creek field was discovered in July, 1929, in porous Edwards limestone at depth of 2500 to 2650 feet. The field covers about 1670 productive acres on which 260 wells have been drilled, making for a spacing of 6.4 acres per well. Initial productions ranged from 100 to 14,000 barrels per day. Gas-oil ratios were probably low, as was the case at Luling and Salt Flat fields situated near by.

Estimates of ultimate recovery are given in Table 7.

Proration was exercised over the

TABLE 6

Estimates of Ultimate Recovery, Oklahoma City Field, Oklahoma*

Authority	Arbuckle	Simpson	Wilcox	Total	Reference
C. Rae	.....	.....	.....	314,000	A. P. I. December, 1931
W. F. Lowe	20,800	80,000	192,000	292,800	Nat. Pet. News January 8, 1932
D. Knowlton	.....	.....	376,000	.....	A. P. I. July 3, 1932
S. F. Shaw	18,000	60,000	175,000	253,000	O. & G. Jour. December 1, 1932
O. L. Brace	.....	.....	.....	290,000	The Oil Weekly June 26, 1933
Hill & Rawlins	.....	.....	400,000	.....	R. I. 3217 June, 1933
Anon	.....	.....	.....	256,000	The Oil Weekly July 31, 1933

*In thousands of barrels.
The production to the end of 1934 has been approximately 243,000,000 barrels.

TABLE 7

Estimates of Ultimate Recovery from the Darst Creek Field, Texas

Authority	Bbl. Ultimate Recovery	Reference
L. E. Smith	28,000,000 to 64,000,000	Nat. Pet. News April 20, 1932
J. R. Suman	70,000,000	The Oil Weekly May 28, 1932

Production to the end of 1934 had totaled about 33,000,000 barrels.

Darst Creek field from the time of the discovery, but whether there has been much actual curtailment for sometime is a question, owing to the serious water condition in the field.

Van Field

The Van field, Texas, was discovered in October, 1929, in the Woodbine sand at depth of about 2900 feet, and has continued under effective unit operation since the discovery. There has been water encroachment, in a few spots, although not through the field as a whole. It is not known whether gas caps have been forming under this low restricted rate of production, although the gas-oil ratio in the Woodbine sand has usually been low and probably the oil is undersaturated, similar to that in the East Texas field, therefore, pressures may not have declined to the point where the gas would dissociate from the oil. Some wells in an area of tight sand have been pumped in the Van field almost from the time of completion. The area covered is about 4350 acres, on which about 450 wells have been drilled to the end of 1934, making for a density in spacing of about 10 acres per well.

Estimates of ultimate recovery are given in Table 8.

TABLE 8

Estimates of Ultimate Recovery from the Van Field, Texas

Authority	Bbls. Ultimate Recovery	Reference
L. E. Smith	108,500,000 to 300,000,000	Nat. Pet. News April 20, 1932
S. F. Shaw	150,000,000	The Oil Weekly April 3, 1933
Anon	250,000,000 to 350,000,000	The Oil Weekly July 31, 1933
Paul Wagner	340,000,000	Oil & Gas Jour. February 22, 1934
J. R. Suman	357,000,000	The Oil Weekly May 28, 1934

Total production to the end of 1934 has been approximately 73,000,000 barrels.

East Texas Field

The East Texas field was discovered in December, 1930, in the Woodbine sand at a depth of approximately 3600 feet. To this time the productive acreage is over 110,000 acres, on which almost 16,000 wells have been drilled, making for a spacing of about seven acres per well. Initial pressures were about 1650 pounds, and the initial gas-oil ratio was about 370 cubic feet per barrel. The gas does not begin to dissociate from the oil until the pressure has been reduced to about 750 pounds.

At the present time, the allowable production is about 430,000 barrels per day or an average of 29 barrels per well. Drilling of wells continues, and unless the market can absorb a greater quantity from this field, the allowables per well will be reduced below that of the above-mentioned figure of 29 barrels per well. Estimates of ultimate recovery are given in Table 9.

TABLE 9

Estimates of Ultimate Recovery from the East Texas Field

Authority	Bbls. Ultimate Recovery	Reference
A. I. Levorsen	1,350,000,000	Int. Pet. Tech. June, 1931
E. G. Woodruff	1,500,000,000 to 2,000,000,000	Oil Gas Jour. June 25, 1932
J. S. Hudnall	1,500,000,000 to 3,500,000,000	The Oil Weekly July 31, 1931
Jack Logan	1,705,000,000 to 2,131,250,000	The Oil Weekly July 31, 1931
F. Lahee	1,380,000,000 to 2,141,300,000	Trans. A. I. M. E. 1932 p. 290
O. L. Brace	937,500,000 to 1,312,500,000	Oil & Gas Jour. February 18, 1932
S. F. Shaw	1,000,000,000	The Oil Weekly April 3, 1933
Anon	1,250,000,000 to 2,500,000,000	The Oil Weekly July 31, 1933
C. E. Reistle	2,203,000,000 to 2,754,000,000	The Oil Weekly February 26, 1934
J. R. Suman	2,100,000,000	The Oil Weekly May 28, 1934

Production to the end of 1934 totals about 611,000,000 barrels, or about 5,300 barrels per acre.

The average reservoir pressure in the East Texas field is still in excess of 1200 pounds, therefore, no gas in any appreciable quantity has dissociated from the oil and tended to form gas caps at the upper parts of the structure as has been the case at Hobbs and Oklahoma City. Water has been advancing from the west, north, and south, and at the present time, lifting equipment is being steadily moved into the field. However, the advance of water, according to J. S. Hudnall[19] has not corresponded to the quantity of oil removed, and of course, this would appear to be correct, inasmuch as the initial pressure has declined from 1650 to 1225 pounds. Hudnall believes that the reason for the reservoir pressure not having declined to a greater extent is due to gas expansion, rather than to water drive. On the other hand, various writers have attributed the "near-maintenance" of reservoir pressure to advancement of water, and recently the theory has been advanced[20] that the water has maintained pressure largely by reason of its own expansibility rather than the movement as a whole of the water from points many miles back of the field.

Conroe Field

The Conroe field was discovered in December, 1931, at depth of approximately 5100 feet. The area covered is approximately 15,000 acres on which 820 wells have been drilled, thus resulting in a spacing of approximately 18.8 acres per well. The initial pressure was about 2275 pounds, and at present the reservoir pressure is about 2080 pounds. Gas-oil ratios are

(*Continued on page* 38)

TABLE 10

Estimates of Ultimate Recovery from the Conroe Field, Texas

Authority	Bbls. Ultimate Recovery	Reference
W. V. Gross	500,000,000	The Oil Weekly March 20, 1933
Anon	500,000,000 to 615,000,000	The Oil Weekly July 31, 1933
O. L. Brace	100,000,000 to 125,000,000*	The Oil Weekly June 26, 1933
J. R. Suman	601,000,000	The Oil Weekly May 28, 1934
Anon	580,000,000	Oil & Gas Jour. August 30, 1934
E. O. Buck	573,323,119	The Oil Weekly November 19, 1934

*This estimate covers "flowing methods only, and whatever quantity it will total by sucker rods."
Total recovery of oil from the Conroe field to the end of 1934 has been approximately 41,000,000 barrels.

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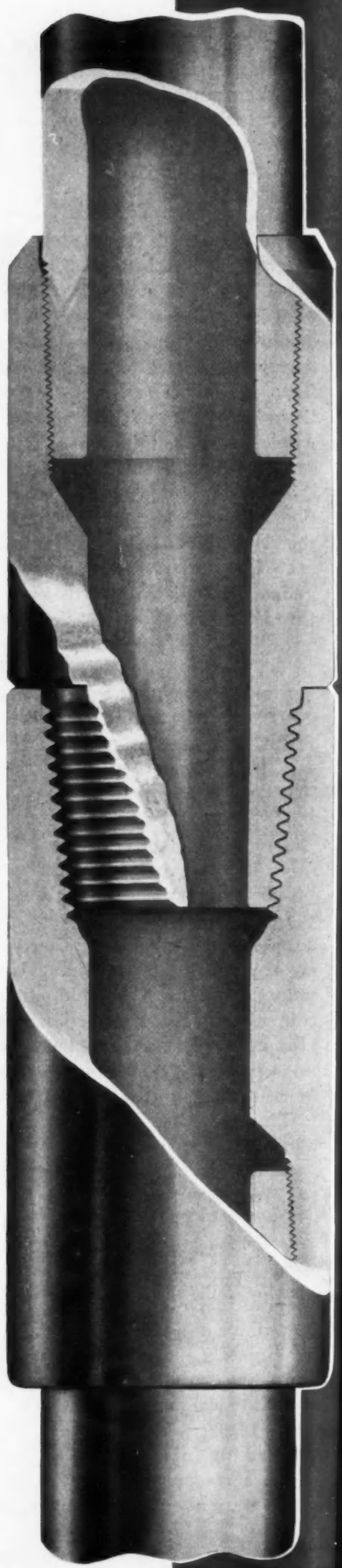

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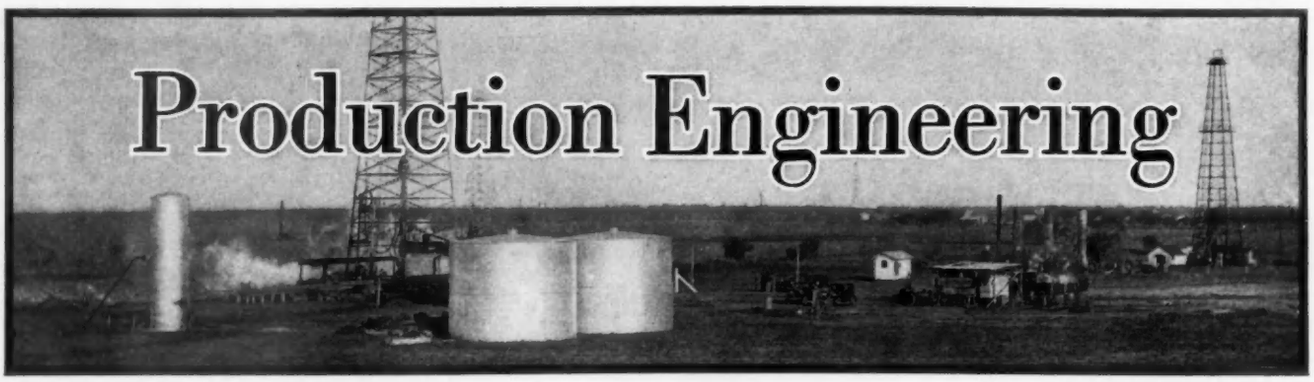

The Trend in Petroleum Technology

STANLEY HEROLD

The thoughts expressed in the accompanying discussion of the now famous "Ickes article" are solely those of the author, and do not necessarily represent the views of* THE OIL WEEKLY *editorial staff. They are printed for their interest, and because the article is discussed from a technical standpoint rather than a general viewpoint like most of the criticism presented to date.

"IF A GANG of supercriminals, burrowing into the mint, should steal away a billion dollars, there would go up in this country such a hue and cry as the world has never heard . . . Yet the same people who would avidly scan tales of such a theft have permitted, practically unheeded, a loss in their oil resources amounting to much more than one billion dollars." They have not. There has been no such loss.

In the realm of petroleum technology Harold L. Ickes gives not one statement that at all resembles the truth. Every assertion he makes concerning the technical manner in which we develop and produce oil from our pools, or concerning what takes place within a producing natural reservoir, is either as false or as malicious in interpretation as we can conceive it to be. Ignorance surely is not the basis of his remarks. "These are grave charges, but they are less grave than the situation to which they relate."

WE CHALLENGE any other present day industry in the United States to show greater improvements in preventing waste, in technology, in efficiency, and in management during the last ten years. And these improvements, let it be said, have not originated in the Department of the Interior at Washington, but only in those dirty, greasy areas owned and operated—so we are pointedly told—by a band of thieves. All the employes of the industry may be honest, but their childish natures, their ignorance of the ways of life, allow them to be led into the ways of wickedness. It seems they steal, and they have always stolen. They steal from everyone who buys petroleum products; they steal from each other; they steal from the Nation; they steal from Dame Nature herself, poor soul. The secretary says so.

"THE CHOICE, of necessity, was 'fuel for the fleet' instead of 'food for the people.'" Really? Surely the British already had food, if that is what they said. We have not yet heard of a hungry people crying for a barrel of oil to swallow.

"Competent geologists will tell them that . . . there is a limit to the depths at which we can find oil." Yes, there must be a limit somewhere, for the crust of the earth is only forty miles thick. But what competent geologists have stated a limit? What footage of depth did they mention?

"Already in many areas in the United States the cream from the top of the tank has been skimmed . . . Once oil flowed with the mere turn of a valve. Now it must be painfully pumped in ever-lessening quantities at an ever-rising cost.

"Many hundreds of millions of barrels which could have been recovered at a reasonable cost have been left in the earth until such a time as we are compelled to pay the higher price necessary to recover it by highly expensive methods."

The inference is, of course, that natural decline in well performance is in itself evidence of waste. It is not.

"THINK OF AN oil pool as a bottle of soda water." Not at all. We stopped using that analogy some eight years ago, when we found that it was not correct.

"The suction around my well bottoms will set up a drawing force that pulls the oil out of the sand under your land. I am going into your safety-deposit box . . . In order to keep your oil from being stolen you must also drill . . ." Suction? Infants suck, but wells do not. Water runs down hill from a farm perched upon it to one lower on the same hill. Is the sea sucking the water down? Is the farmer down the hill stealing water from the one above him? Perhaps he should be content only with that water which falls upon his own land.

"Too rapid development has placed thousands of wells where hundreds would have given more oil at a lower

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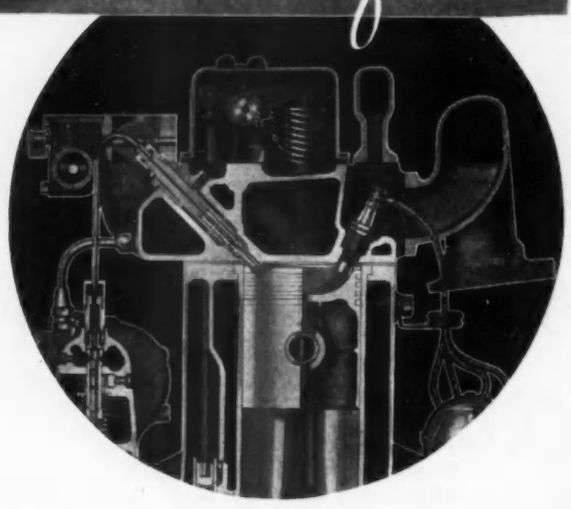

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After the power stroke, the exhaust valve opens, the piston returns, the cylinder is scavenged, and thus prepared for a repetition of the cycle. Neither air nor fuel is preheated so that delivered power and volumetric efficiency are correspondingly high.

Write for Bulletin 1000. *Waukesha Motor Company, Waukesha, Wisconsin.*

THIS IS No. 2 OF A SERIES on the Hesselman Oil Engine. No. 3 will appear next month. A reprint of the complete series will be mailed on request.

WAUKESHA ENGINES

cost." No technologist can state why this is so. Indeed some of them say it is true, but they state no reasons. Others say it is not true, and they give perfectly logical reasons. We suspect the basis of statements unaccompanied by technological reasoning.

"It may well be asked why this wanton waste of our cheap oil resources has not already been reflected in a higher price for gasoline. The answer is simple." Sufficiently simple for a simpleton to understand: There just is no such wanton waste.

As for Texas, "Expert engineers estimate that the loss of this gas means that from 400,000,000 to 500,000,000 barrels of easily recoverable crude oil will stick in the sands." No, it will not. Water is driving the oil to the wells, and it does the job very efficiently.

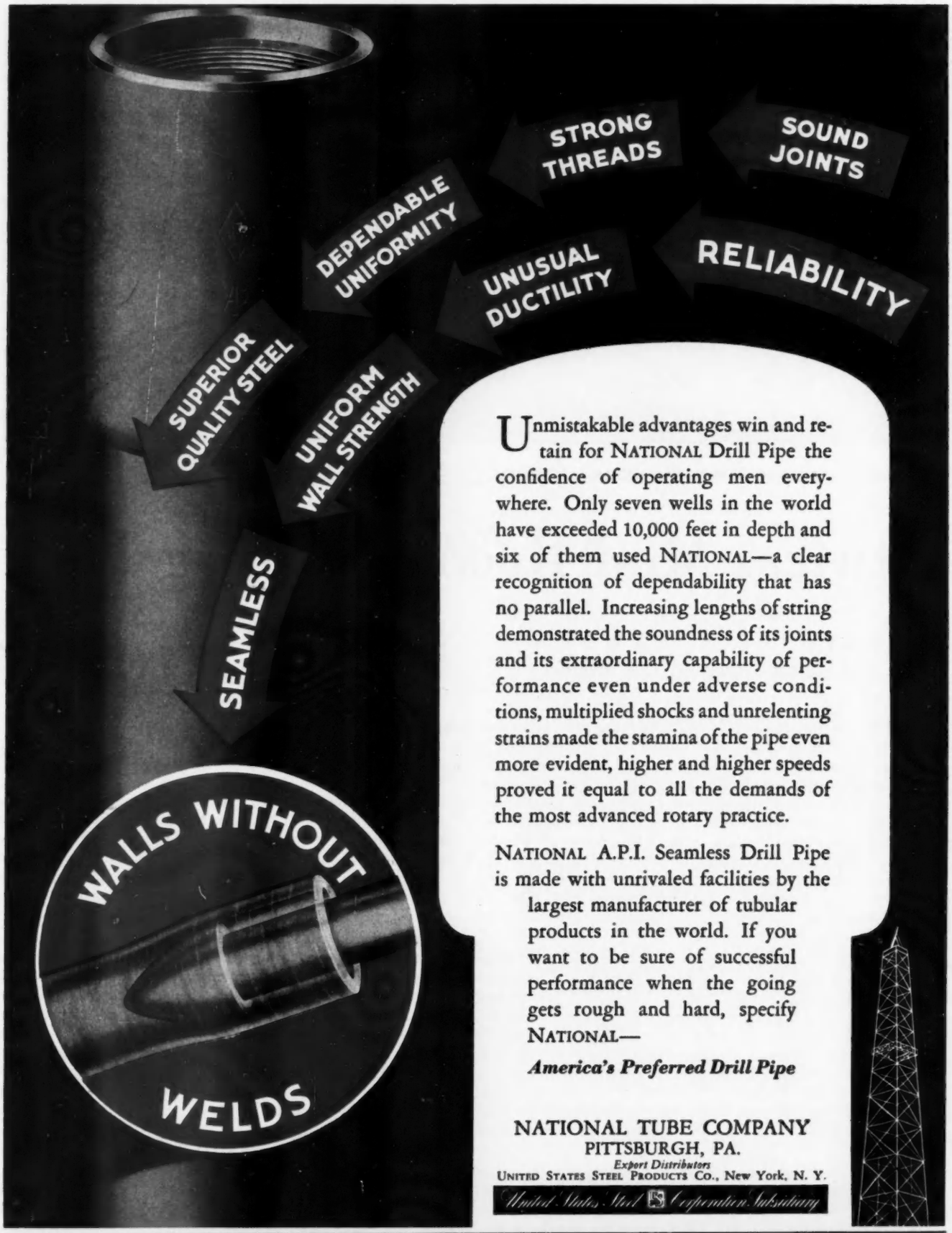
Once more as to Oklahoma, "Here, again, millions upon millions of barrels of oil have been allowed to become bogged in the earth's reaches." Not a barrel that any action of ours has had in Nature's way of giving us oil.

Still once more, as to Kettleman Hills, California, "As the result of the collossal waste of gas and its potential energy, experts have estimated that these 2.000.000,000 (barrels) have been cut in half. The other half is still there . . . but gone is the energy which would have lifted it cheaply to the top." There will be gas aplenty in the upper sands as long as there is oil in the lower ones. Several years ago there was a waste of gas. That was before the lower sands of oil with little gas were discovered. But that waste never meant wasted oil. The reservoir is not like a bottle of soda water.

Who are these engineers whose estimates on wasted oil are given? If they are in the employ of the Government our tax funds are being wasted wantonly and used maliciously.

Wasted gas? Yes. But gas is not oil. Gas, when blown to the wind, is like the rain fallen on the desert; it is lost. True, such a rain brings wild flowers, but we cannot afford to catch, store and transport the water to arable lands far away. However, we can estimate how valuable it would be, if it were delivered to places where we live. We need only accredit it the amount we now pay for available water. Billions of gallons of water, and therefore millions of dollars in gold, as we see, are annually being wasted by our neglect. There are indeed wild flowers with the gas that is wasted. The gasoline that is extracted from it, and the oil that comes with it, make it possible at a very reasonable price to jump into the old car on a week end, fill it with cheap gasoline, ride to the countryside, and see the pretty flowers. Yes, gas has its value in gold, and so has water, provided they are at the place, or can be delivered to the place where they are useful. Both gas and water are what they are, where they are. And we should not equate gas to barrels of oil in speaking of its heat or monetary value at places where it is not.

The entire argument set forth by Mr. Ickes is as nonsensical as his drawing which supposedly represents "A Graphic Chart of the Nation's Oil Tank." Backward, backward is the trend of petroleum technology in the hands of a politician who seeks to gain that which he dares not mention outright. Not by prostituting technology shall one fulfill ambitions with respect to an industry which adopts day by day better scientific methods in the discovery, drilling, production, manufacture, and distribution of oil.



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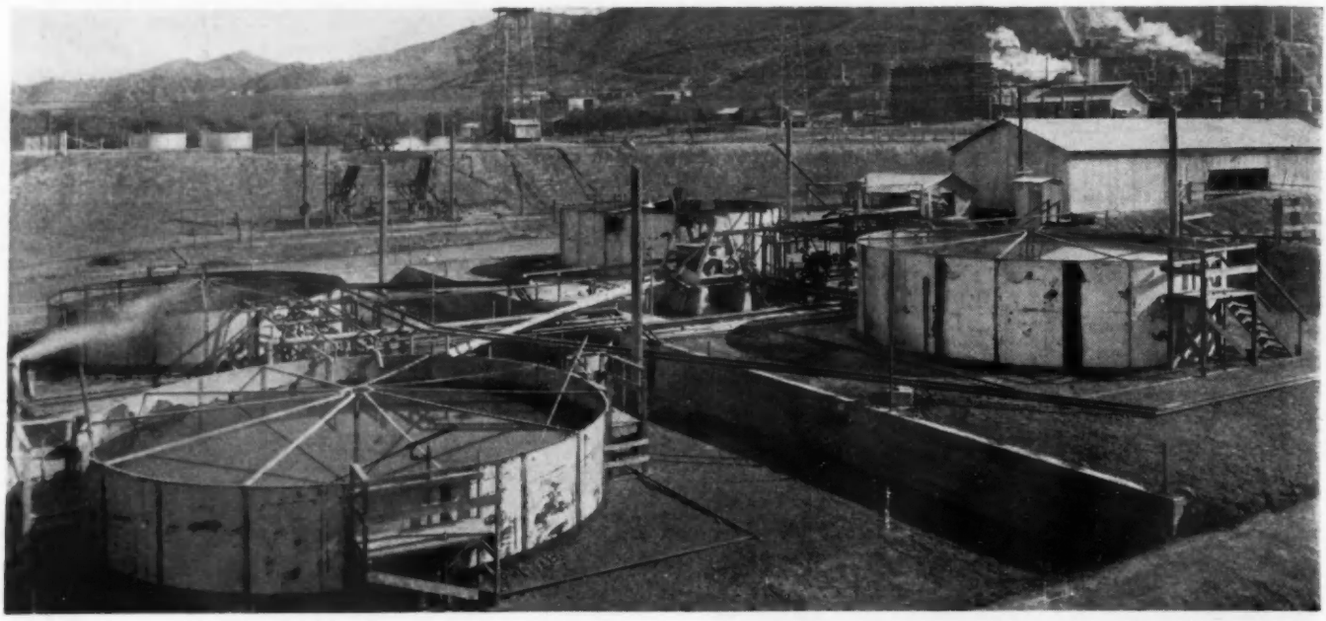


General Petroleum Corporation's central mud plant. At lower left is reclaimed weight material collection tank

Central Mud Reconditioning Plant And Aiding

WALLACE A. SAWDON
Petroleum Engineer, Los Angeles

MUD conditioning is being given considerable attention in all drilling operations and the use of admixtures is playing an important part in maintaining control of circulating fluid to meet subsurface contingencies as they occur. Gas cutting and sanding are two factors that greatly deteriorate the mud stream and frequently necessitate the dumping of mud that contains materials of value. Such materials, however, often can be recovered; and to accomplish this, General Petroleum Corporation has built a central mud reconditioning plant in the Ventura Avenue field. The results obtained by the operation of this plant demonstrated both its efficiency and economy.

When using heavy mud as a means of controlling high-formation pressures, the addition of weight materials is essential. While the amount of weight material in the mud stream may not in some cases be lessened to any serious extent while circulating, the mud may become so gas-cut that its weight falls far below that necessary to control the formation pressures. The mud then has to be dumped entirely or reconditioned to provide the necessary weight. The primary object of the central mud conditioning plant is, therefore, the recovery of weight material from old mud and its utilization for new drilling fluid.

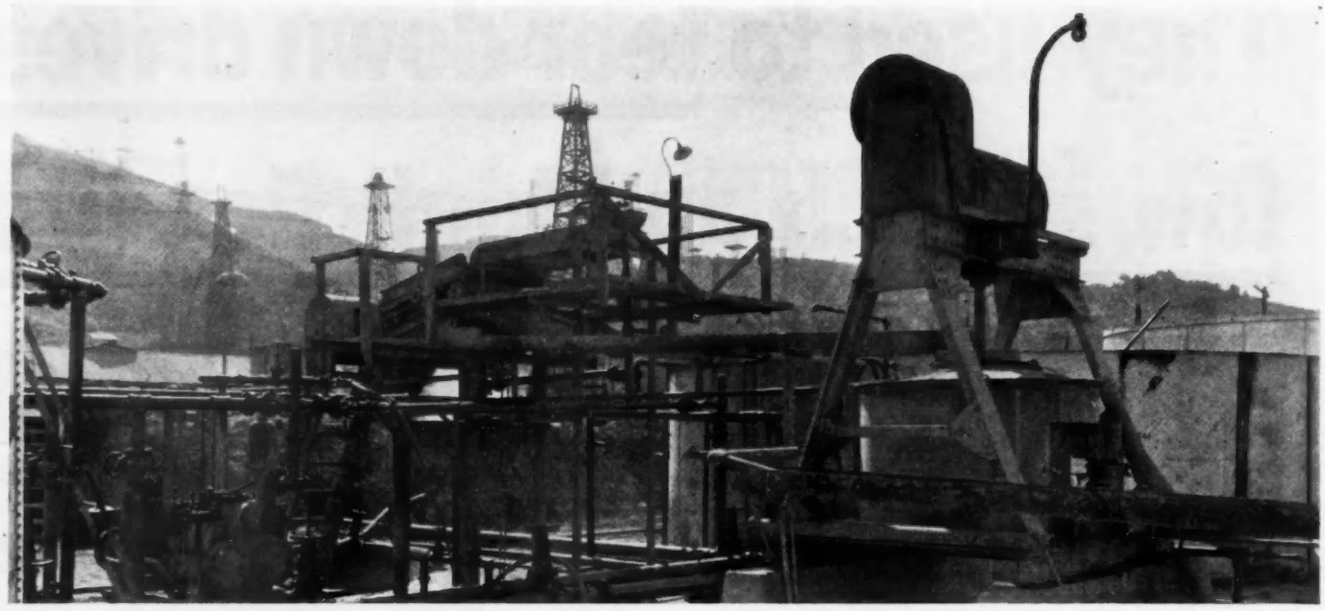
The colloidal properties of the mud, however, cannot ever be disregarded and it has been found that the gas-cutting frequently destroys the colloids or renders them unrecoverable from an economic standpoint. Yet in reconditioning the mud, a considerable amount of colloidal matter has been found usable in the lighter portions taken off; but even when using this lighter fluid for shallow drilling, additional colloidal material is added to bring the mud up to its proper colloidal content.

Desanding of the mud brought into the Ventura Avenue plant has not been found difficult. At first, the sand was taken out by the centrifugal separator with which the plant is equipped; but by using a vibrating screen at the plant in addition to the vibrating screens at the well, the sand is removed readily. The sand from other fields may not, of course, be so easily taken out of the mud and some means, such as centrifugal separation, may be necessary.

The operation of the central mud reconditioning plant is indicated in the accompanying sketch. The used mud first passes through a vibrating screen with 60-mesh screen. Both to assist in washing out the sand and to facilitate separation of the heavy material from the fluid, water is added. At present, and with the mud being reclaimed from the company's wells in the Ventura Avenue field, approximately one percent of sand is left after passing through the vibrating screen. This one percent has been found (by testing) to be smaller than 100 mesh and is thought to be harmless.

From the screen, the mud goes to the centrifugal separator, entering the top of a rotating bowl where it is immediately subjected to centrifugal force. The action is then that of a centrifuge with the heaviest material being thrown toward the periphery and the heavy portion of the fluid passing out through horizontal nozzles into an outer chamber. The lighter portion of the fluid eventually is passed out in its diluted form through an overflow.

The heavier portion of the mud fluid passes through an underflow into a dump bucket on the end of a scale arm. Until a predetermined weight set on the scale is reached, this



The vibrating screen and separator are the main operating units for reconditioning and reclaiming the mud

Is Reclaiming Weight Material . . . Mud Control

fluid is recirculated through the separator. When the predetermined weight is reached, the heavy fluid is diverted from recirculation through the separator by the bucket dropping and letting it flow into a trough that carries it to a storage tank. When the fluid entering the bucket falls below the weight required, the bucket raises and puts the fluid back into the separator. The lighter portion of the fluid is passed into another trough that carries it to a different storage tank.

The action of the centrifugal separator is automatic. The revolving bowl into which the gas-cut mud flows is hung on one bearing and is electrically driven at a speed of 540 revolutions per minute. The weight of the heavy fluid can be set at any desired number of pounds per cubic foot and thus regulated to meet changing conditions.

When the separator was being used for desanding purposes, the larger particles of sand were thrown to the outer chamber and allowed to settle in the separator. When a sufficient quantity had accumulated, the sand was removed and the machine flushed out.

It has been found that the heavy portion now being taken off by the separator consists almost entirely of weight material and water and that it is practically devoid of colloids. Colloidal material is therefore added before settling can take place in the tank and the mud prepared for use within a short time after the weight material is recovered.

The pressures now being encountered at the greatest depth in the company's wells at Ventura can be handled adequately by mud weighing 95 pounds per cubic foot. On a well now drilling at 7000 feet, the mud used was built up entirely with weight material recovered from old mud. Only colloidal material had to be added to put the mud fluid into condition.

Where the heavier mud is not necessary, the weight is sometimes set for 82 to 83 pounds and the mud thus taken off blended with the heavier recovery. Sometimes, even the lighter portion taken from the centrifugal separator can be used for shallow drilling since there is sufficient colloidal material left in it to allow the water to gather at the top for removal without undue settling out of solids. Some of this lighter mud is being hauled by truck to the Rincon field at this time; but none is used without the introduction of colloidal material in addition to that which may remain in the lighter portion taken off from the separator.

Careful control of the drilling mud is procured by tests both at the well and at the plant. The field tests are made from three to four times a tour and consists of measuring the viscosity with a funnel viscosimeter and the weight with a mud hydrometer. The sand content is determined at the well by washing in a centrifuge tube although a centrifuge itself is not used at the well. The average percentage of solids is being found to run from 30 to 40 percent, including sand, weight material and the solids contained in the original mud.

Under ordinary conditions, test samples are taken from the suction alone. When the gas-cutting is bad, samples also are taken from the return and a determination of conditions can be made by comparing the two tests. The vibrating screens at the wells will sometimes remove the gas and make it unnecessary to dump.

At the well now drilling at 7000 feet, the mud stream consists of 535 barrels in circulation plus 200 barrels in two suction pits. The mud goes in at 95 pounds and when it falls to 82 to 84 pounds it is pumped into a 1000-barrel tank from which it is taken to the conditioning plant as a sufficient quantity accumulates.

An average of 200 barrels of reconditioned mud per day now

They used to tear down drives low stretch and high flex life

BUT NOW YOU CAN MAKE THEM

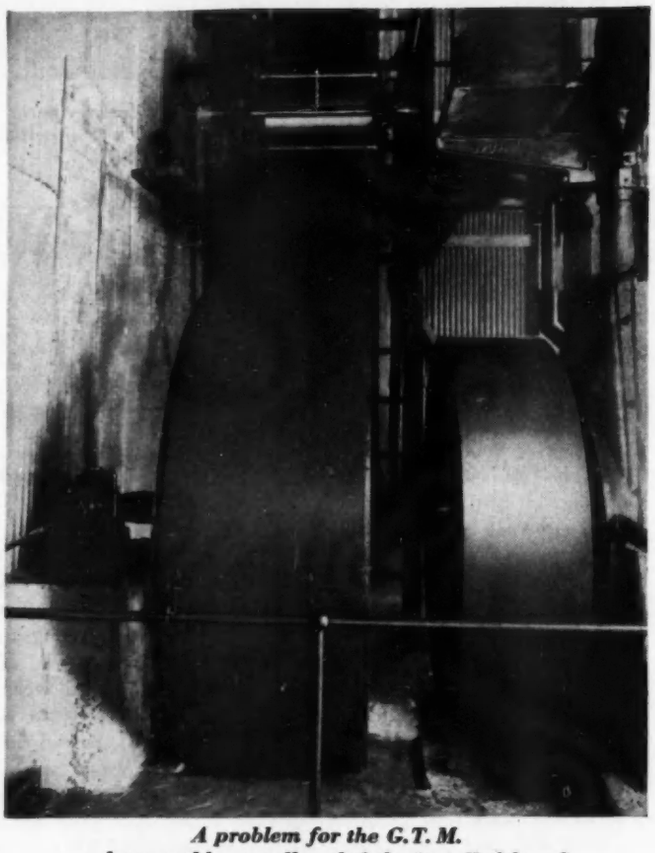
THE best proof of the savings and spectacular performance which Goodyear COMPASS Cord belts have been delivering is the trouble a wise man would take to install them.

Experience showed that—once installed—they outlasted other belts by as much as *ten to one.*

So, when necessary, plants tore down drives and tore out walls to put this money-saving belt on the job.

But the G. T. M. (Goodyear Technical Man) wasn't satisfied to let it go at that. There must be some way—he figured—to settle this difficulty—some way to install the belt so it wouldn't have to be tailor-made for every drive.

So he put the problem up to headquarters, and now we announce the answer—a *patented vulcanized splice*—with complete instructions and equipment for making these belts endless on the job.



A problem for the G.T.M.
—how could an endless belt be installed here?

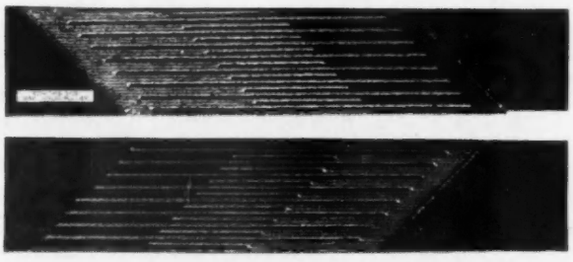
Simple, when you know how

How this is done—how cords can be dovetailed together—is shown by the diagrams pictured here. And the result—installed on the drive—is still an *endless* belt, with all the advantages which make the Goodyear COMPASS Cord belt *the first major improvement in belt design in fifty years.*

—even remodel walls to get the of Goodyear COMPASS CORD ENDLESS BELTS—

ENDLESS RIGHT ON THE JOB!

It gets its long life and freedom from ply separation from the fact that it has *no load-carrying plies* to cause internal chafing at the pulleys. The load is carried by a single layer of cords or "ropes," laid side by side,



The Goodyear patented splice—notice how cords are dovetailed when ends are put together. No chance of splice failure here

"floated" in rubber, and sheathed in a protecting envelop built for *long wear.* This envelop is designed to stretch longitudinally, throwing the load on the cords.

In addition—this construction makes *the most nearly stretchless belt known.*

COMPASS Belts, so designed, are 25% thinner than belts of equal horsepower capacity—which means that they *stand up under flexing*—even on small pulley and reverse bend drives.

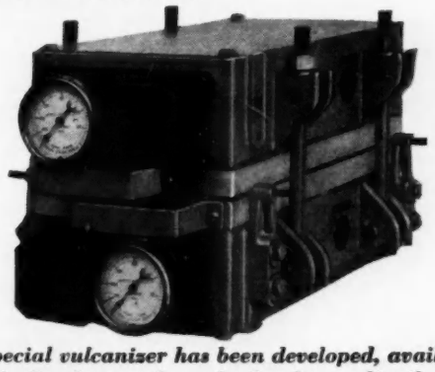
How COMPASS stands up

The case histories of this spliceless, plyless, long-lived belt include many such records as this:

"53 months unfaltering, trouble-free service on a pulp mill beater drive—*ten times the service of previous belts.*"

"Three years of stretchless, trouble-free service (and still going) on a drive where previous belts gave out at 19 months."

"33 months on an oil field pump drive—without service interruption—and still going strong. Previous belt broke five times in less than 5 months—total life only one-sixth the COMPASS belt record."



This special vulcanizer has been developed, available through Goodyear, through Goodyear distributors, or it can be purchased by customers for their own use

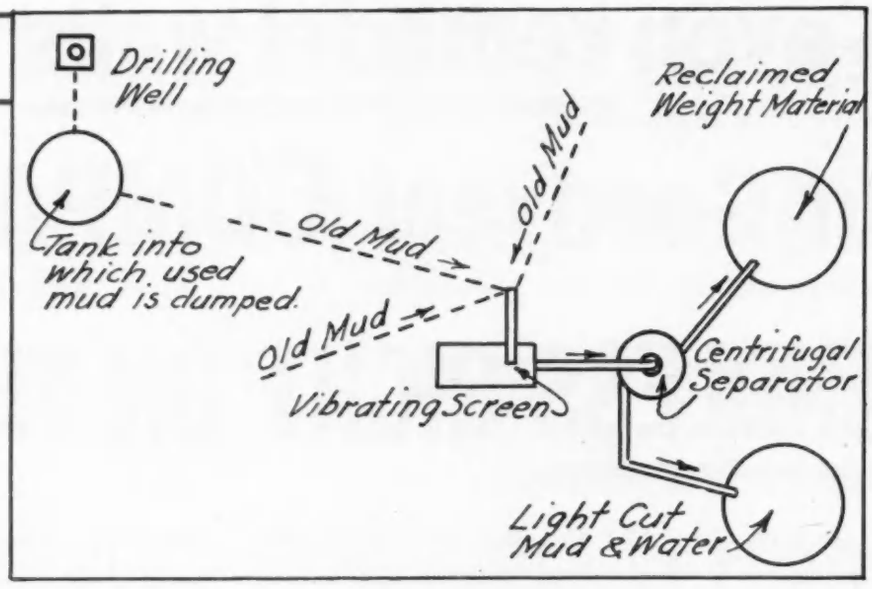
Such advantages are available on any drive, now that COMPASS Belts can be made endless on the job.

Why not have a talk with the G.T.M.? Just write to Goodyear, Akron, Ohio, or Los Angeles, Calif., or call your nearest Goodyear Mechanical Rubber Goods Distributor.

GOODYEAR

BELTS • MOLDED GOODS • HOSE • PACKING

Central mud plant flow chart



is being added to the mud stream of this well. When coming out of the hole, a swabbing action lets a certain amount of gas into the mud. During a trip involving only a change of bit, about 50 barrels of mud, therefore, has to be dumped. With longer delays, a correspondingly greater amount of old mud has to be dumped and replaced with reconditioned mud.

Laboratory tests are, of course made at the plant to insure that properly conditioned mud is sent to the wells. These tests consist of a measurement of viscosity, of weight, shear, percent of solids and settling. The sand content is here determined by classifying screens up to 200 mesh.

From records now available at the plant, it is estimated that the reclamation equipment will save nearly 60 percent of the weight material used in the mud. During a 5½-hour run, 40 barrels of 97-pound mud and 140 barrels of 95-pound mud were recovered from 320 barrels of mud fluid that entered the plant with an average weight of 83 pounds per cubic foot.

A supply consisting of 500 barrels of 95-pound mud and 100 barrels of 110-pound mud is kept at wells drilling in high-pressure formations. The 110-pound mud is, of course, used only for emergencies. It is felt that, if necessary, mud with only two percent of colloids can be used successfully and there have been cases where 120-pound mud has been employed. A 100-barrel supply of colloidal material also is kept available at the well. This is in a highly concentrated fluid form prepared at the central mud plant since it is easier to mix a liquid with the mud through a valve than by introducing the dry admixture into the ditch.

MUD PLANT LOG

Date_____

SHIPMENTS:

Kind or name of mud	Weight	Viscosity	Shear force	% water settling	% sediment	From	To	No. Bbls.	Remarks
1									
2									
3									
4									
5									

MIXING AT PLANT:

Base mud	Weight	Viscosity	Makes of muds added			Final Weight	Final Viscosity	Final Shear	No. Bbls.	Disposal	Remarks
1											
2											
3											
4											
5											

REPAIRS AND ADDITIONS:

Name of Equipment	Nature of Work	Materials used	Time consumed	Remarks	EQUIPMENT USAGE-HOURS			
					Screen	Centrifuge	Boilers	Remarks
1								
2								
3								
4								
5								

FURTHER REMARKS:

FOREIGN DEVELOPMENTS AND TECHNOLOGY

Testing the Portable Gravimeter

PROF. DR. ING. A. BERROTH
Aachen*

THE gravimetric method for exploring new mineral resources is characterized by measuring the gravitational forces of the earth, due to the law of attraction. In other words, it measures the weight of a certain mass that differs from place to place. In reality, the weight itself is of no importance. What matters are the differences in weight which are exceedingly minute quantities and the measuring of which requires a very accurate procedure.

If a sensitive spring scale supporting a brass weight, is placed at different locations above a hidden salt dome, the reading of the scale will vary from place to place. These differences are caused by the fact that not only the total mass of the earth attracts the weight, but also subsurface structures of greater or smaller density in the vicinity, for example, a salt dome. Thus, by measuring the force of attraction a fairly exact picture of the subterranean tectonics is obtained and geophysicists are able to determine whether or not there exist salt domes, faults, foldings of the strata, or deviations in the density of masses. The outlines of these disturbances also can be determined.

Previous Methods

The first pendulum measurements were carried out for scientific purposes in order to determine continental deviations from the spherical form of the earth. In 1920, Professor Kossmat, German geologist, showed pendulum observations could be applied with advantage to geophysical exploration of mineral deposits. Since then, the method has been improved steadily. But measurements with the so-called "invariable" pendulum (which, however, is not invariable) are very cumbersome and slow of progress, because at each station the period of oscillation of a quartermeter pendulum has to be determined with the accuracy of one ten millionth part of a second. Even the most precise chronometers do not keep time with the constancy required. A second's length, when using such chronometers, varies so much that the use of a chronometer for this purpose can be compared with the use of an indiarubber tape for measuring lengths. Besides, the accuracy of chronometers is allowable only if the time of observations is sufficiently long. A full 24 hours is required.

To cover 24 hours, the early form of pendulum had to be re-started every two hours because of the damping effect of the surrounding air. By using a pendulum oscillating in a vacuum, each new impetus sufficed for eight hours. The accuracy grew better, but the time of observation remained unaltered (24 hours). The next and last improvement was the so-called "reference pendulum" observations. Here the variations of the time scale were eliminated by using coincident time scales at a base station and one or more movable field stations. In this way observation time was cut down from 24 to one hour, but on the other hand, it was necessary to use an extremely complicated apparatus, the handling of which needed much practical experience. The increase in accuracy was considerable. With this last mentioned method data on 481 stations in Oklahoma and Texas were obtained in 1929 and 1930. A recent modification of reference pendulum observations are pendulum measurements by crystal-controlled timing, but results have not been made known yet.

FIGURE 1
The portable gravimeter

The operating principle of the torsion balance is quite different. The torsion balance indicates in which direction there is an increase in gravity. This increase is plotted by an arrow, the size of which denotes the amount of increase. The gradient may be compared with the small up or downward movement of an aneroid barometer needle, resulting from a vertical movement of the instrument or from difference in air pressure. Pendulum and gravimeter data correspond to the reading of the barometer. As the shift of the needle allows conclusions as to the weather the gradient allows important conclu-

*The author carried out early pendulum measurements for Seismos Company, Hannover, Germany, in the Gulf Coast of Texas and Louisiana in 1928 and 1929.

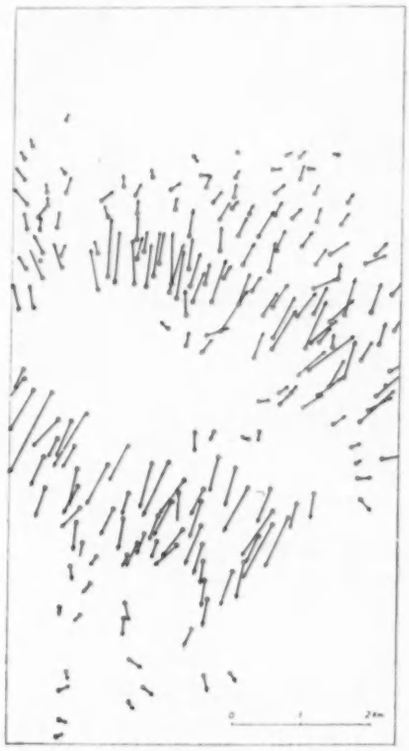


FIGURE 2
Gradients by torsion balance of North German salt dome

FIGURE 3
Isograms and gravimeter data

sions about the subterranean distribution of masses.

Portable Gravimeter

Gravitational acceleration at Berlin will normally amount to 981,300 units, called milligal (mgal). The geologist demands that it shall be measured with an error of not more than minus or plus one milligal. Until recently only the reference pendulum method could accomplish this. Scientists have endeavored during the past 10 years to design a static gravimeter suitable for field work, based upon the principle of the spring scale. The instrument should be light enough to be carried from one station to another, allowing the differences in gravity to be indicated on a scale. Doing this with a spring scale, however, would meet with numerous difficulties. The greatest difficulty results from differences of temperature, which alter the physical properties of the materials.

After many years' experience with a gravimeter of the author's construction, Dr. St. v. Thyssen and A. Schleusener, succeeded in construcing the Thyssen III portable instrument,[1] the first practical results of which now are at hand.

The instrument, in its latest form, permits the coverage of about 1500 square miles from one base station with a mean error of from minus or plus 0.75 mgal at each observation point. The readings require no complicated calculation and the results are at disposal readily. This instrument needs neither ice packing nor cork insulated cabin. During July and August, 1934, it has never been affected by any change of temperature. The weight of the instrument is 33 pounds, and it can easily be transported in any four-seated automobile. The gravimeter on field work is shown in Figure 1.

Results

Greatest stress was laid on check data obtained from:

1. Repetitions on different days,
2. Comparisons with previous methods (pendulum and torsion balance),
3. Circuit or "chain" measuring, a reliable method collecting data on three stations, a, b, and c. The differences in gravity are not only determined between a and b, a and c, but also between b and c. The sum of differences should be equal to zero,
4. Comparisons between readings with an auxiliary mass and readings at the base and on top of a tower. For this purpose a 34-meter building at Hannover and a limestone rock in Holstein, 45 meters high, were used. The differences of gravity corresponding to such changes in elevation are 10.5 and 13.0 mgal respectively.

The third checking method, that of circuit measuring, cannot be adopted for pendulum work, this latter being too expensive. Where it can be used, it increases very much the reliability of statements about mean errors.

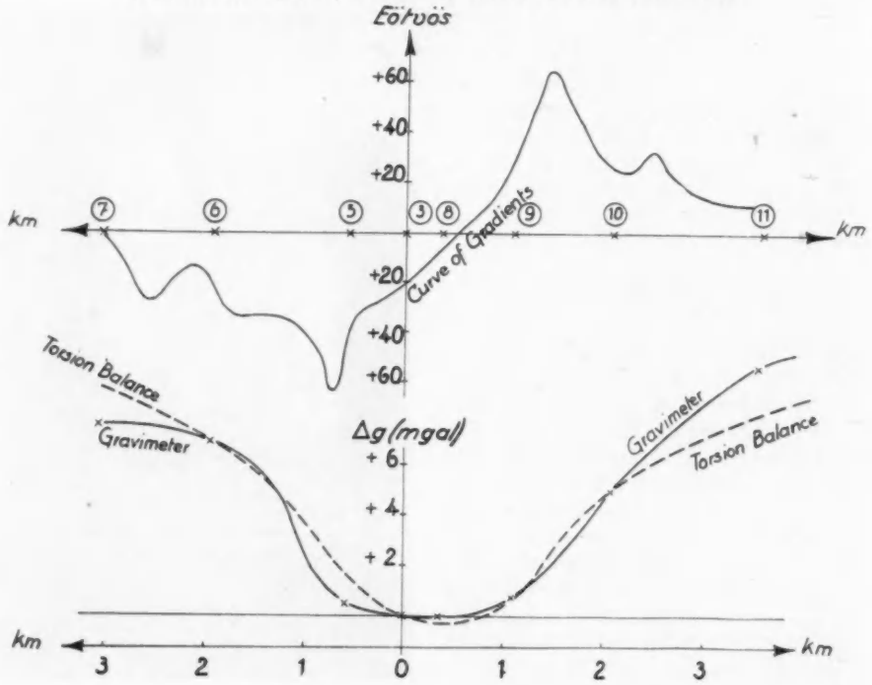
When comparing with torsion balance data, it must be kept in mind that these may happen to be erroneous on account of invisible accumulations of masses, such as erratic blocks, etc., which do not enter into the calculation.

Gravimeter Work on a North German Salt Dome

Gravimeter data were compared with torsion balance measurements. This salt dome was covered by 15 gravimeter stations, three of which were independently repeated at the conclusion of the measurements in order to check the accuracy. The greatest distance from the base amounted to five miles.

Figure 2 shows the gradient map fur-

FIGURE 4
Gradient and gravity curves of North German salt dome



[1] "Oel und Kohle" 2 (1934) Page 382 and "Techn. Blatter" Dusseldorf 24 (1934) Page 620.

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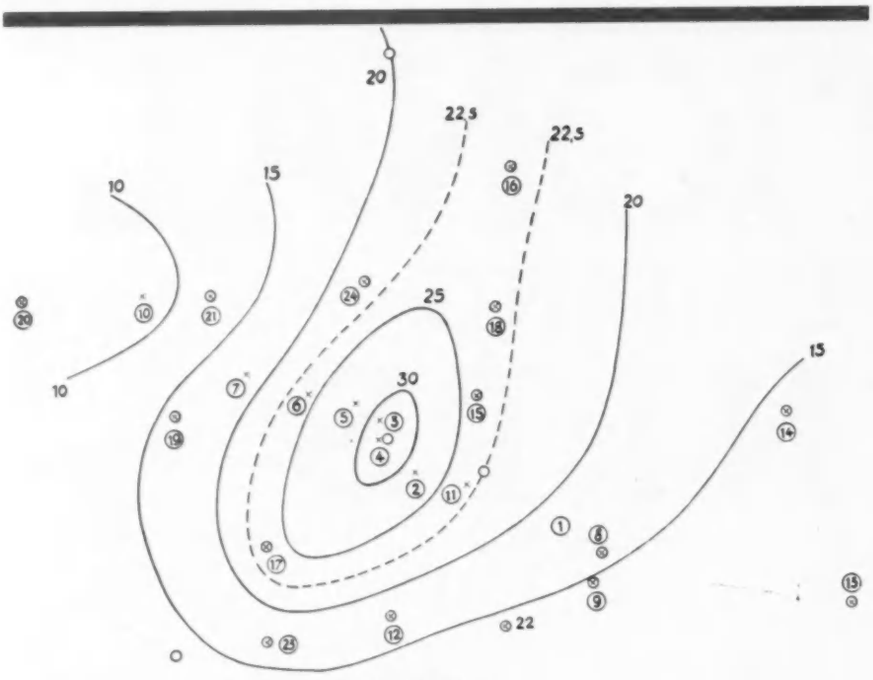

FIGURE 5
Isograms based on pendulum data (Holstein, Germany, 1927)

nished by the torsion balance, while Figure 3, derived from Figure 2, contains the lines of equal gravity (isogams), and moreover, the new gravimeter values in milligal (Bouguer reduction). Eight of the gravimeter stations are situated in line, allowing progressive addition over the whole distance. So Figure 4 was obtained, the upper portion of which corresponds to the individual gradients, while the lower portion shows the curve of added gradients together with the curve of the observed gravimeter values.

Considering the limits of error, the gravimeter values agree very well with the gradient map and the repeat measurements resulted in differences of 1.4, 1.1 and 0.1 mgal.

It follows that the conformity of the new method, both within itself and in comparison to a second independent method (torsion balance), is quite satisfactory.

Measurements on an Extended Tectonic Disturbance in Holstein (Germany)

The following geophysical work was made by Seismos Company:

1. Pendulum on about 100 stations in 1927
2. Torsion balance in 1928
3. Gravimeter in 1934 on 23 independent stations of unknown gravity. Thirty-four measurements were made, 11 of which, therefore, were checks, consisting of five repetitions after more than a week's interval, and six circuit measurements. The greatest distance covered between one station and the base was 19 miles.

Of the pendulum results, in Figure 5 is given an isogam map of part of the territory covered in 1927, station 4 (Rickling 1 = 32.0) serving as base. When compared with the isogam map deduced from the new gravimeter survey (Figure 6), it shows conformity, taken on a whole. Deviations must mostly be ascribed to the pendulum, as can be proved.

Figure 7 shows the gradient map of the torsion balance. By progressive addition we get the following Bouguer values in milligals at the individual stations:

Station 2	= 29.8
Station 5	= 30.8
Station 6	= 26.0
Station 7	= 20.1
Station 11	= 23.9
Station 15	= 28.0
Station 21	= 11.8

These values are well in accordance with the gravimeter.

The three repetitions by gravimeter mentioned above resulted in the following differences (Figure 8):

Between Stations	20-10 d	= +	1.7 mgal
	6- 4 d	= —	0.4 "
	8- 1 d	= —	0.1 "
	4- 1 d	=	0.0 "
	9- 1 d	= +	2.0 "

Conformity is satisfactory.

At the closing of the six independent circuits (Figure 8) the following were the closures.

Circuit I. Stations	18-10	= +	10.7	mgal
	16-18	= +	10.0	"
	1-16	= —	31.6	"
	4- 1	= +	24.1	"
	10- 4	= —	13.2	"
Closure		= —	0.0	mgal
Circuit II. Stations	18-10	= +	10.7	mgal
	4-18	= +	4.1	"
	10- 4	= —	13.2	"
Closure		= +	1.6	mgal
Circuit III. Stations	15- 4	= —	5.5	mgal
	1-15	= —	20.2	"
	4- 1	= +	24.1	"
Closure		= —	1.6	mgal
Circuit IV. Stations	3- 4	= —	0.7	mgal
	1- 3	= —	23.3	"
	4- 1	= +	24.1	"
Closure		= +	0.1	mgal
Circuit V. Stations	3- 4	= —	9.0	mgal
	1- 3	= —	23.3	"
	2- 1	= +	20.3	"
	3- 2	= +	5.0	"
Closure		= +	1.3	mgal
Circuit VI. Stations	1-10	= —	9.1	mgal
	4- 1	= +	24.1	"
	10- 4	= —	13.2	"
Closure		= +	1.8	mgal

The small closures in the gravimeter circuits clearly show that the measurements are quite reliable. In a large sur-

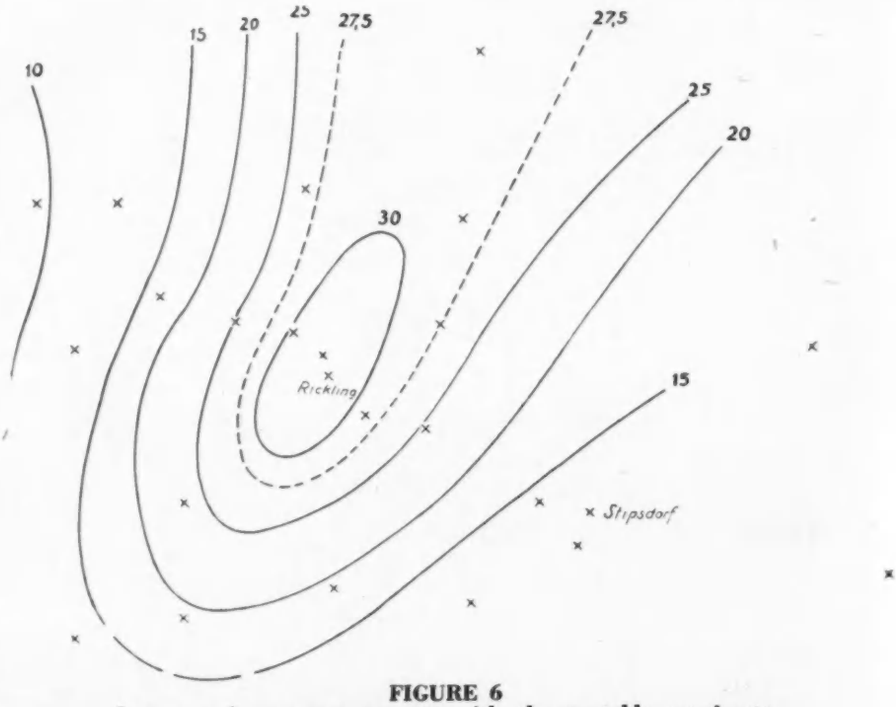

FIGURE 6
Isograms from measurements with the portable gravimeter (Holstein, Germany, 1934)

vey, the total closing error will be reduced by adjusting the small circuits.

The gravimeter measurements at two separate elevated places gave almost exactly the presumed values deduced from calibration by weight.[2]

Gravimeter results will now be given in detail for the following stations:

No. 1—Segeberg
No. 2—Fehrenbotel
No. 3—Rickling II
No. 4—Rickling I (base station)
No. 5—Rickling III
No. 6—Willingrade
No. 7—Kl. Kummerfeld
No. 8—Stipsdorf
No. 9—Christiansfelde
No. 10—Neumuenster
No. 11—Negernbotel
No. 12—Schafhaus
No. 13—Langenniendorf
No. 14—Gnissau
No. 15—Daldorf
No. 16—Kalubbe
No. 17—Klint
No. 18—Tarbeck
No. 19—Boostedt
No. 20—Wasbeck
No. 21—Husberg
No. 22—Mozen
No. 23—Hartenholm
No. 24—Rendswuhren

[2]See "Oel und Kohle" 2 (1934) Page 382.

Above: Figure 7—Torsion balance measurements in Holstein, Germany

Below: Figure 8—Chart of circuits (Holstein, Germany, 1934)

The directly measured gravity differences were:

Stations	Mgal	Stations	Mgal
1-4	— 24.1	1- 4	— 24.1
2-1	+ 20.3	14- 1	+ 8.9
3-1	+ 23.3	15- 1	+ 20.2
4-4	0.0	16- 1	+ 31.6
5-4	0.0	17- 4	— 9.8
6-4	— 3.8	18- 4	— 4.1
7-4	— 9.1	15- 4	— 5.5
8-1	— 1.5	19-10	— 2.6
9-1	— 9.7	20-10	+ 1.5
10-4	— 13.2	21-10	+ 3.4
11-4	— 11.4	22- 1	— 4.0
12-1	+ 0.8	23- 1	+ 4.1
13-1	— 4.1	9- 1	— 7.7
10-1	+ 9.1	18-10	+ 10.7
2-4	— 5.0	24-10	+ 15.3
3-4	— 0.7	20-10	+ 3.2
6-4	— 4.2	16-18	+ 10.0
		8- 1	— 1.6

The comparison of the pendulum survey and torsion balance, and the comparison of the repeat and the circuit measurements by gravimeter, agreed in a mean error of plus or minus 0.75 mgal per station.

Comment

Data presented suggests that for the determination of relative gravity between two stations, the error will be numerically greater than 0.5 mgal half the time and half the time less. The isogram material on Gulf Coast torsion balance maps commonly is 0.2 or 0.5 mgals. Salt dome minima such as that of the Esperson dome have an amplitude of 2.5 mgals.

DR. DONALD C. BARTON.

Reserves of Prorated and Unitized Fields

(*Continued from page 23*)

about 750 cubic feet per barrel. The saturated sand thickness is said to average 56 feet.

At present the allowable of the Conroe field is about 40,000 barrels per day, or about 50 barrels per well per day.

Estimates of ultimate recovery from the Conroe field are given in Table 10.

Some 38 wells in the Conroe field have made water, ranging from one to 50 percent. The writer is puzzled to account for the production of water, other than in edge wells, in a field where spacing has been about 19 acres per well, having sand thickness of 56 feet, where ultimate recovery is estimated at 500,000,000 to 600,000,000 barrels, with reservoir pressure yet 2100 pounds and with wells restricted to about 50 barrels of oil per day. Under such conditions one is inclined to wonder whether some of the factors assumed as above are not out of order.

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Anglo-Persian to Drill New Concession in Kuwait

Anglo-Persian Oil Company will have charge of operations on a new concession recently obtained from the Sheikh of Kuwait, in Iraq, by English and American interests, according to Roy Atherton of London.

Kuwait is a principality on the northwestern coast of the Persian Gulf, and its petroleum resources will be developed by the Kuwait Oil Company, the organization formed by the American and British interests to carry forward drilling.

MARKETS and STATISTICS

Markets Show Strength as Hot Oil Output Decreases

MUCH optimism has come into the markets in consequence of setting up of the federal tender board to help combat hot oil activities in East Texas. Refined oil prices have consequently shown some increase already, as regards both wholesale and retail transactions; and further gains are anticipated.

Hot oil producing and refining had been declining sharply for several weeks prior to the recent reinstatement of federal oil shipping control, and the activities of the new federal tender board have tended to further reduce the hot oil output.

Whereas around 35 refineries were operating in East Texas several weeks ago, presumably in large part on illegally produced crude, there were early last week only about 20 of the plants in operation, and additional shutdowns were expected.

At the middle of the week the market for tenderable third grade gasoline at East Texas refineries was unusually strong at 3½ cents a gallon, and the same price was prevailing also in North Texas and Oklahoma. That price was an eighth cent higher than in the previous week. Similar improvement had occurred also for middle and standard grades of gasoline.

As the week progressed, it was indicated the markets were continuing to gain strength, and some sales were reported at prices above that indicated above.

While the prevailing price on U. S. motor gasoline of third grade classification, below 62 octane, was 3½ cents a gallon in East Texas, the middle grade, 62-67 octane, was averaging 4 cents, and premium grade, 68-70 octane, 4½ cents. The corresponding prices in North Texas were 3½, 4¼, and 4⅝ cents, and in Group Three region (Oklahoma), 3½, 4⅛, and 4⅝ cents.

Retail Prices Higher

The retail markets quickly responded to the improvement in the tank car market, especially in Texas, where invasion of hot gasoline from East Texas has for long kept conditions unstable. In the Houston area the service station posting on third-grade gasoline jumped in one movement from 12 to 15 cents, including the five cents taxes.

Some hesitation has prevailed among buyers, pending more definite indication that the new tender board will survive attack in the courts. But last week's developments in that connection tended to generate confidence in the board. A group of refiners instituted a court attack against the board, but without a formal court ruling having been made, they agreed to attempt settlement of the controversy through regular administrative channels. Soon afterward, a United States attorney filed petition in federal district court at Houston seeking to enjoin oil, railroad, and steamship companies from interstate shipping of oil alleged to have been produced illegally and transported from East Texas to Houston. This latter suit was regarded as indicating that the federal authorities believe the new program will be upheld in court. A court hearing of the case was set for March 18.

East Texas Hot Oil

In the latter part of the past week the output of hot oil in East Texas was indicated to have fallen to between 15,000 and 20,000 barrels daily. For the week ending March 4, date of latest statistics on the field, the supply of contraband material was averaging between 25,000 and 30,000 barrels daily. In preceding weeks, the volume had been ranging mostly between 40,000 and 50,000 barrels daily.

In consequence of restoration of the federal tender board, the East Texas hot oil output will decline, it is believed, to a practically insignificant level. Prior to the overthrow of the original federal tender board early in January by the Supreme Court decision in the Panama-Amazon case, the East Texas contraband oil output was being held below 10,000 barrels daily.

With the new board functioning, the

Mid-Continent Markets Improve During Week

THE Mid-Continent refined market assumed a positive tone during the early portion of the week and by mid-week the third-grade U. S. motor fuel, 62 and below octane, had increased approximately one-half cent per gallon to a strong 3⅝ cents. Refiners in the East Texas area were reported refusing anything less than 3½ cents per gallon f.o.b. plant, as appproximately 25 percent of the capacity had been shut down by the federal tender board. Between the date of invalidation of Section 9-C of the code by the United States Supreme Court and the passage of new legislation to take its place, members of the tender board are reported to have been carrying on secret investigations in the East Texas area. As soon as activities of the board were again legalized the information secretly obtained was laid before the courts and immediate action was possible. North Texas refiners were reported asking a minimum of 3⅝ cents per gallon for motor fuel f.o.b. plant and finding good demand.

On Thursday, March 7, East Texas motor fuel laid down at Houston, was bringing from .0569 to .0573 per gallon on the commodity exchange. Trading was not especially large but many buyers and sellers apparently were anxious to learn the workings of the exchange and were feeling it out. Burning oils were strong under the influence of cold weather in the large consuming centers and kerosene was seeing a strong demand as jobbers came into a tight market to replenish supplies for spring agricultural demand. The stabilized naturals had been in good demand for several days under cold weather influences. Although market observers were pleased with the trend of the week it was not a surprise since all factors had pointed to an upward trend.

market for hot oil merchants is now limited to tank truck sales of gasoline, kerosene, and other light refinery cuts.

When the federal tender board was functioning previously, the state tender board utilized information developed by the federal investigators in passing judgment upon requests for state tender approvals. The railroad commission has been notably weak on providing such data. Now the state board is privileged again to work in conjunction with the federal agents in passing on tender requests. This tends to tighten up the leaks on intrastate shipments. At the same time, no one will dispute the fact that the federal board is efficient in preventing contraband material from reaching interstate markets.

California Market

The developments in East Texas are expected to have a perceptible, strengthening effect on marketing conditions in California, which have been somewhat unstable lately.

Export demand for California material has continued confined primarily to the Far East, with few shipments being made through the Panama Canal.

The price wars have continued in Southern California, with some refiners and numerous independent service station owners persisting in cutting under established prices. A few refiners, operating outside the government sanctioned sales agency, have been making tank wagon deliveries of gasoline at 10½ to 12 cents a gallon; and the lowest retail prices have ranged from 12 to 14½ cents, compared with a regular price posting of 15½ cents for third grade material.

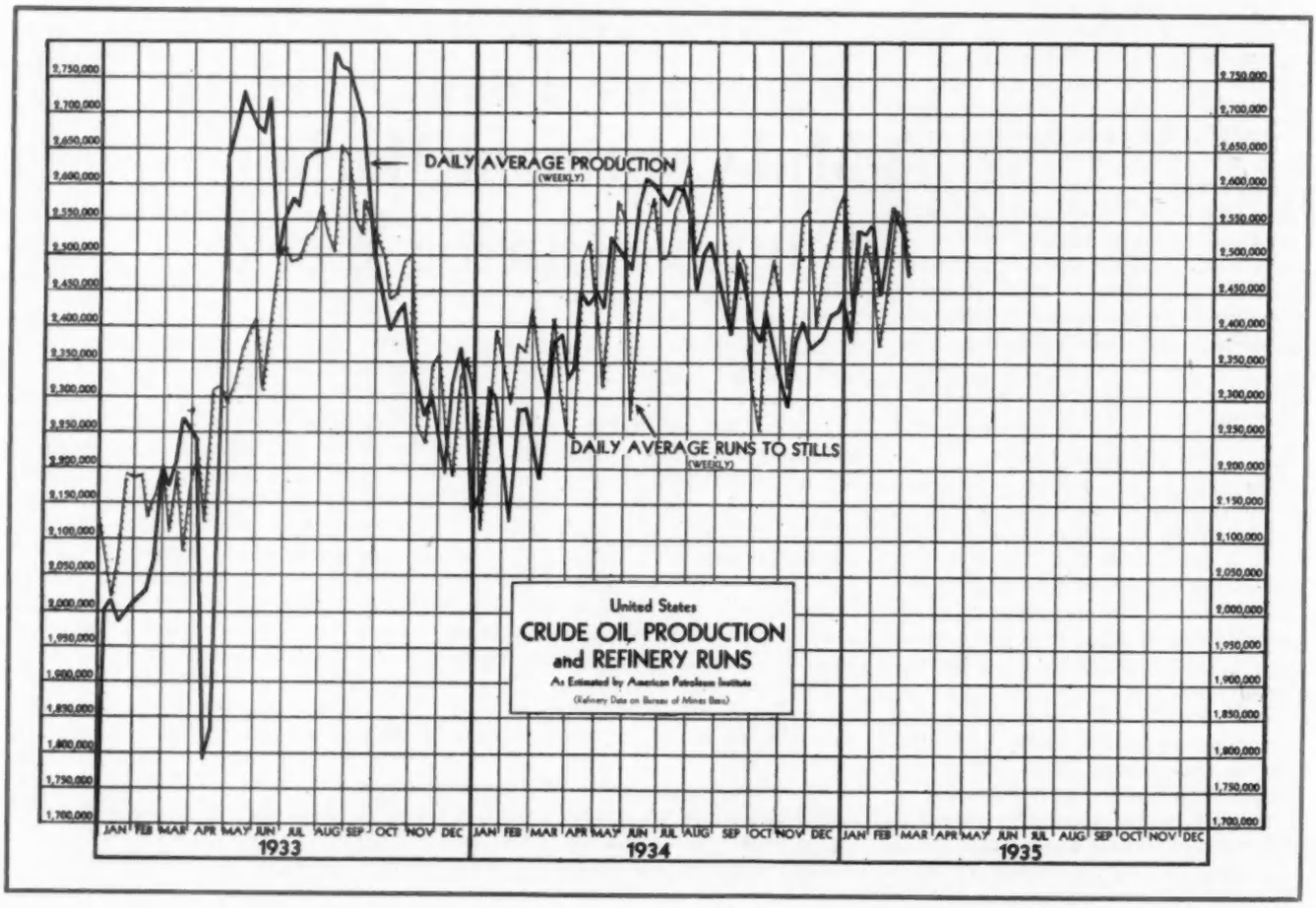
There is sufficient free crude oil on the California market to supply the cut price refiners, but in some instances it is reported such crude is commanding small premiums. There is also a comparatively small amount of natural gasoline for spot sale, such material being available to the cut price refiners. The output of natural gasoline in the state has been above the natural demand, in fact, and there is some anxiety that difficulties will ensue unless such production is reduced.

With Board Working East Texas Shipments Drop

DOMINATING influence maintained heretofore by East Texas refiners over the tank car price structure on refined products appeared to be losing its effectiveness at the conclusion of the first week of service by the reinstated Federal tender board, which resumed operations March 2. During the three-day period ending March 6 tank car shipments of all products averaged only 70 cars daily, while shipments of finished gasoline involved only 109 cars, or an average of slightly more than 36 cars daily. Shipments have been discontinued on topped crude, crude tops, residuum and other offbrand products that largely involved illegal production in the past.

Improved gasoline prices appeared promising late last week for the majority group of 20 plants continuing to operate in East Texas. Quoted prices on U. S. motor specification material had advanced to 3⅝ cents, while the mid-bracket product was selling at 4⅜ cents per gallon. The advance was primarily due to majors in the Middle West having placed orders with plants in group three and North Texas refining centers, with the outlook bright for East Texas plants to command a share of the market support.

During the week ending March 3, rail shipments of various grades of products jumped from 1011 to 1538 cars. This gain was due to plants ridding themselves of all products that



could be mustered past the state tender board before the return of the Federal board to active duty. More than 50 percent of the volume the past week was consigned to coastwise points. There were 482 cars, or an aggregate of 4,064,585 gallons of so-called residuum moved from the field, and all shipments of this commodity were abruptly terminated when the Federal board resumed operation. Marketing of products derived from illegal production, which was variously estimated at between 15,000 and 20,000 barrels daily towards the close of the past week, is virtually restricted to tank truck hauls.

Reports indicate that some of the East Texas plant owners are withdrawing from active operations, and are surrendering their crude connections. Union Refining Company, headed by Harry J. Strief, is to shut down after current stocks are refined. The plant has been supplied by the Roy 1, Davis Pipe Line Company, which has been acquired by East Texas Oil Refining Company, along with connections to 27 wells and an allowable of 871 barrels daily. However, 12 wells formerly served have been tied into by Longview Gathering System. Desota Crude Oil Purchasing Company, an independent buyer, has contracted to sell 3500 barrels of crude daily during the last 10 months in 1935 to Empire Oil & Refining Company at the posted price, plus 5 cents gathering charges.

East Texas Tank Car Shipments

Week Ending March 3, 1935

Products—	No. Cars	Estimated Gallons
Gasoline	527	4,290,606
Residuum	482	4,064,585
Fuel Oil	220	2,142,792
Casinghead Gasoline	116	999,030
Distillate	89	725,601
Kerosene	57	462,084
Gas Oil	42	343,119
Crude Oil	5	50,490
Total	1,538	13,078,107
Total Prev. Week	1,011	8,588,153
Coastwise	821	
Interstate	432	
Intrastate	285	
Total	1,538	
Tendered	1,479	
Without Tenders	59*	
Total	1,538	

*Fuel oil moved under Federal Court injunction.

Production of Crude Oil Upward During Week

PRODUCTION of crude oil in the United States during the past week turned sharply upward, the regularly reported daily average output having been 2,530,625 barrels, as compared with a daily average production of 2,540,325 barrels during the previous week. It is not unusual, however, for two or three states to produce above their allowables during the first part of the month.

California, with an average daily production of 520,000 barrels, showed the greatest increase during the week. Long Beach, Santa Fe Springs, Huntington Beach, Midway-Sunset, Playa del Rey and miscellaneous fields recorded substantial production gains. The Playa del Rey field more than doubled its daily average production during the week, due to completion of one large well in an extension. The 15,000-barrel daily output was the highest in a long time. California usually shows a higher daily production during the first part of the month than during the latter part.

Production in Texas, exclusive of "hot" oil, showed an increase during the past week, but the state total is roughly in line with the Federal agency allowable of March 1. Increases were nominal in all districts.

Oklahoma production was almost exactly the same as during the previous week, with Oklahoma City showing a gain and Fitts a similar loss.

Production in Louisiana continues to creep upward, being considerably above the Federal agency allowable of 110,500 barrels.

Surreptitious production, or "hot" oil, has declined to the lowest level in weeks, the indicated output of this type of oil having been estimated at 30,000 barrels daily.

Futures Trading Starts on Exchange

New York.—Trading in gasoline and crude oil futures was inaugurated here March 5 by Commodity Exchange, Incorporated. In gasoline futures the trading was spirited, sales for the day totaling 1,386,000 gallons. The prices declined during the session as much as 16 points from opening levels, but the market closed steady.

Sales of crude oil futures contracts aggregated 14,000 barrels in the day's trading. At the close, prices had declined as much as eight points from opening levels, but the market was steady at the close.

For crude oil the contract unit is 2000 barrels of 42 U. S. gallons each on basis of measurement at 60 degrees Fahrenheit. Base grade is Oklahoma-Kansas crude of 36-36.9 A. P. I. gravity. Price fluctuations are in multiples of one-quarter cent a barrel.

The contract unit in gasoline is 42,000 U. S. gallons. The basic grade is U. S. motor gasoline as per Fed-

United States Crude Oil Production

Estimates Compiled by The Oil Weekly

District or State	Barrels Week Mar. 9	Daily for Ending Mar. 2
TEXAS—		
Texas Panhandle	62,500	62,000
North Texas	57,750	58,000
West Central Texas	26,000	27,000
West Texas	150,000	149,000
East Central Texas	51,500	51,750
East Texas Field	*440,000	*437,500
South Texas	60,000	59,000
Texas Gulf Coast	176,250	175,000
Total Texas	1,024,000	1,019,250
OKLAHOMA—		
Oklahoma City	136,450	127,750
Seminole Area	113,275	113,425
Tatums	5,600	5,600
Lucien	7,450	8,375
Fitts	6,200	11,525
Others	188,675	191,150
Total Oklahoma	457,650	457,825
KANSAS—		
Ritz-Canton	10,100	10,450
Voshell	5,625	6,700
Nikkel-Hollow	10,350	11,025
Sedgwick	9,925	10,705
Burrton-Haury	22,875	21,000
Others	84,750	86,500
Total Kansas	143,625	146,380
LOUISIANA—		
North Louisiana	22,900	22,700
Louisiana Gulf Coast	96,000	94,000
Total Louisiana	118,900	116,700
ARKANSAS	31,000	31,000
CALIFORNIA—		
Long Beach	70,000	58,000
Santa Fe Springs	39,500	36,000
Huntington Beach	39,000	34,000
Dominguez	18,000	19,000
Inglewood	9,000	9,000
Ventura Avenue	23,500	24,000
Seal Beach	8,000	7,000
Midway-Sunset	56,000	47,000
Elwood	9,000	9,500
Kettleman Hills	65,000	69,000
Mountain View	12,000	11,000
Playa del Rey	15,000	7,000
Others	156,000	132,500
Total California	520,000	463,000
MOUNTAIN STATES—		
Wyoming	33,000	33,500
Montana	10,750	10,700
Colorado	4,200	4,100
Total Rock Mountain States	47,950	48,300
NEW MEXICO	47,500	47,750
EASTERN STATES	106,000	104,100
MICHIGAN	34,000	36,000
Total United States	*2,530,625	*2,470,305
*Surreptitiously produced oil in East Texas not included in above figures, estimated at	30,000	40,000
Grand total including surreptious production	*2,560,625	2,510,305

Crude Runs to Stills, Finished and Unfinished Gasoline, Gas and Fuel Oil Stocks; and Cracked Gasoline Production, Week Ended March 2, 1935

(Figures in thousands of barrels of 42 gallons each)

DISTRICT	Daily Refining Capacity of Plants			Crude Runs o Stills		Stocks of Finished Gasoline			(a) Stocks of Unfinished Gasoline	(b) Stocks of Other Motor Fuel	Stocks of Gas and Fuel Oil	Daily Charging Capacity of Cracking Units			Cracked Gasoline Production
	Potential Rate	Reporting		Daily Average	% Operated	At Refineries	Bulk Term., in Trans. & Pipe Lines	Total at Refys., Term., etc.				Potential Rate	Reporting		Daily Average
		Total	%										Total	%	
East Coast	582	582	100.0	467	80.2	6,945	10,024	16,969	985	195	10,043	496	471	95.0	85
Appalachian	150	140	93.3	97	69.3	1,208	947	2,155	295	110	929	69	69	100.0	21
Ind., Ill., Ky.	446	422	94.6	344	81.5	5,859	3,971	9,830	710	55	4,146	325	309	95.1	94
Okla., Kans., Mo.	461	386	83.7	237	61.4	3,447	2,042	5,489	750	410	3,849	256	238	93.0	64
Inland Texas	351	167	47.6	96	57.5	1,325	98	1,423	231	415	1,844	82	66	80.5	26
Texas Gulf	601	587	97.7	514	87.6	6,391	320	6,711	1,324	120	8,960	358	355	99.2	93
Louisiana Gulf	168	162	96.4	107	66.0	1,022	424	1,446	260	.....	3,828	71	71	100.0	20
North La.—Ark.	92	77	83.7	44	57.1	196	64	260	38	85	421	41	38	92.7	10
Rocky Mountain	96	64	66.7	29	45.3	911	.....	911	111	50	724	46	42	91.3	10
California	848	822	96.9	416	50.6	8,503	1,957	10,460	964	2,515	65,596	209	209	100.0	59
TOTALS WEEK: March 2, 1935	3,795	3,409	89.8	2,351	69.0	35,807	19,847	55,654	5,668	3,955	100,340	1,953	1,868	95.6	482
February 23, 1935	3,795	3,409	89.8	2,432	71.3	34,191	20,208	54,399	5,704	3,990	100,579	1,953	1,868	95.6	486

Below are set out estimates of Crude Runs and Cracked Gasoline Production on B. of M. Basis for Week Ended March 2, 1935, compared with March, 1934 Bureau figures.

Estimate B. of M. Basis March 2, 1935	2,475		530
Estimate B. of M. Basis February 23, 1935	2,555		535
U. S. B. of M. March, 1934: Daily Average Crude Runs	2,316	U. S. B. of M. March, 1934: Daily Average Cracked Production	446

(a) Amount of Unfinished Gasoline contained in Naphtha Distillates.
(b) Estimated. Includes Unblended Natural Gasoline at Refineries and Plants; also Blended Motor Fuel at Plants.

eral specification VV-G-101, within the range of 55-59, inclusive, octane numbers. Other deliverable grades are 60-64 octane, at ¼ cent over the contract price, and 65 octane and above, at ½ cent premium over the contract price.

Exchange Quotations

On the trading for the opening day, the following quotations were reported by the Wall Street Journal:

Gasoline

Month	Opening	High	Low	Close
June	5.82† 5.90	5.90	5.78	5.78†
July	5.90† ...	5.90	5.83	5.78*
Aug.	5.93† 5.95	5.95	5.80	5.79*
Sept.	5.92† ...	5.92	5.80	5.80†
Oct.	5.94 @ 5.96	...	...	5.81*
Nov.	5.94 @ 5.97	...	...	5.82*
Dec.	5.95† 5.96	5.96	5.84	5.84†
Jan.	5.96 @ 5.97	5.98	5.88	5.87*
Feb.	5.98† ...	5.98	5.98	5.89*

*Nominal. †Traded.

Crude Oil

Month	Opening	High	Low	Close
June	1.25†	1.25	1.25	1.17 @ .18
July	1.21½ @ .23½	1.20½	1.18	1.17 @ .18
Aug.	1.21¼ @ .24	....	....	1.17 @ .18
Sept.	1.22½†	1.22½	1.22½	1.17 @ .18
Oct.	1.21† .24	....	....	1.17 @ .18
Nov.	1.21*	....	....	1.17 @ .18
Dec.	1.22†	1.22	1.19	1.17 @ .18
Jan.	1.21½ @ .25	....	....	1.17 @ .18
Feb.	1.21¼ @ .25	....	....	1.17 @ .18

†Traded. *Bid.

The minimum fluctuation is .01 cent per gallon.

First delivery month on both crude and gasoline is June, 1935. March trading is limited to contracts for delivery in June and the eight succeeding calendar months.

Deliveries will be made only from storage tanks licensed by the exchange. Crude oil deliveries in the Houston-Galveston, Texas, district or in the Cushing-Drumright area, Oklahoma, are to be made at the contract price for the basic grade, with premiums and/or discounts for other grades. Deliveries of gasoline are to be made in the Houston-Galveston area at contract price and at New York at a premium of 5/16 of one cent per gallon above the contract price.

Young County Oil Properties Sold

Wichita Falls, Texas.—Discovery well of a new shallow oil pool in northwestern Young County drilled by E. R. Perkins and associates has been sold to Lester T. Burns, Wichita Falls operator, for a reported consideration of $29,000 cash. It is the largest deal of any consequence made this year in North Texas, and involves 145 acres of leases and the wildcat producer, which is rated at from 30 to 50 barrels daily on pump from oil sand at 1084-1095 feet. The strike by Perkins et al was made on the Castleman fee, NEc SE¼ Section 72, TE&L Company Survey, about three-quarters of a mile from nearest production.

Austin, Texas.—The House sub-committee of the Revenue and Taxation Committee has advised that its report on the proposed increases in the gross production tax bill will be ready for presentation to the committee on March 18.

Comparison of Permits Granted For New Wells

State—	Week Ending Mar. 2	Total this Mo.	Total this Year	Total this Date Last Year	1934 Year Total
Arkansas	...	...	31	11	100
California	18	18	129	82	629
Louisiana	11	11	123	127	799
Kansas	26	26	252	132	1,015
Michigan	10	10	72	72	460
Oklahoma	39	39	345	310	2,045
Texas	178	178	2,171	1,496	10,550
Total	282	282	3,123	2,230	15,598

CRUDE OIL PRICE QUOTATIONS

(Figures Represent Basic or Flat Prices—Revised to March 8, 1935)

DISTRICT	Low Grav.	Dif.	High Grav.	Date
Oklahoma-Kansas	28—$ .84	2¢	40—$1.08	9-29-33
N. and N.-C. Texas	28— .79	2¢	40— 1.03	9-29-33
Texas Panhandle				
Gray County	34— .79	2¢	40— .91	9-29-33
Carson-Hutchinson	34— .69	2¢	40— .81	9-29-33
West Texas				
Ector, Pecos, Wk'lr	*.75			9-29-33
Crane, Upton, Howard and Glasscock	*.70			9-29-33
East Texas	*1.00			9-29-33
Texas Gulf Coast				
Conroe	35— 1.09	2¢	40— 1.19	9-29-33
Tomball	*1.15			9-29-33
Cleveland	*1.00			1-11-34
†Goose Creek, Hull Liberty, Orange, Pierce Junction, Moss Bluff, Raccoon Bend, Sour Lake, Spindletop, Sugarland, West Columbia, Humble, Rabbs Ridge	Below 20— .82	2¢	34— 1.12	9-29-33
South and S.W. Texas	Below			
Refugio (Light)	20— .82	2¢	34— 1.12	9-29-33
Refugio (Heavy)	*.85			9-29-33
Saxet	*.85			9-29-33
Mirando	*.80			9-29-33
Pettus	*1.05			9-29-33
Salt Flat	*.87			9-29-33
Darst Creek	*.87			9-29-33
Arkansas				
El Dorado (Light) and Rainbow	29— .79	2¢	40— 1.03	3-17-34
El Dorado East Field and Smackover	*.70			9-29-33
North Louisiana	29— .79	2¢	40— 1.06	9-29-33
Urania	*.85-*.87			1- 1-34
South Louisiana	Below			
Lockport	20— .80	2¢	34— 1.10	9-29-33
Iowa, Cameron Mds.	Below 20— .70	2¢	34— 1.00	9-29-33
Rocky Mountain States				
Salt Creek	29— .84	2¢	40— 1.06	9-29-33
Elk Basin	*1.17			9-29-33

*All gravities—flat rate.
†Gulf Coast prices as posted by Humble Oil & Refining Company.

DISTRICT	Low Grav.	Dif.	High Grav.	Date
Grass Creek (Light)	*$1.17			9-29-33
Big Muddy	*1.01			9-29-33
Rock Creek	*1.02			9-29-33
Sunburst	*1.35			9-29-33
Lance Creek	*1.02			8-25-33
Osage	*.62			8-25-33
Cat Creek	*.45			8-25-33
Ponders	*.65			8-25-33
Hog Back, N. M.	*1.00			9- 8-33
Lea County, N. M.	*.75			9-29-33
Mid-West States				
Lima	*1.15			2-1-35
Illinois	*1.13			1- 5-34
Princeton	*1.13			1- 5-34
Western Kentucky	*1.08			5-26-34
California				
Signal Hill	14— .65	1¢	16— .66	9- 6-33
	17— .69	2¢	22— .84	9- 6-33
	23— .88	3¢	30— 1.09	9- 6-33
Seal B., Alamitos Hts.	19— .65	3¢	20— .68	9- 6-33
	21— .72	4¢	22— .76	9- 6-33
	23— .81	4¢	26— .93	9- 6-33
	27— .98	4¢	30— 1.10	9- 6-33
Huntington Beach	14— .65	4¢	15— .69	9- 6-33
	16— .72	3¢	19— .81	9- 6-33
	20— .83	3¢	28— 1.07	9- 6-33
	29— 1.09	3¢	30— 1.12	9- 6-33
Inglewood	14— .65	4¢	16— .73	9- 6-33
	17— .76	4¢	18— .80	9- 6-33
	19— .83	4¢	20— .87	9- 6-33
	21— .90	4¢	22— .94	9- 6-33
	23— .97	4¢	24— 1.01	9- 6-33
Playa del Rey	14— .65	1¢	15— .66	9- 6-33
	16— .69	4¢	17— .73	9- 6-33
	18— .76	4¢	19— .80	9- 6-33
	20— .83	4¢	21— .87	9- 6-33
	22— .90	4¢	23— .94	9- 6-33
	24— .97	3¢	25— 1.00	9- 6-33
			26— 1.04	9- 6-33
Olinda-Brea Canyon	14— .65	4¢	16— .73	9- 6-33
	17— .76	3¢	28— 1.10	9- 6-33
Athens-Rosecrans Domingues	23— .83	3¢	24— .86	9- -33
	25— .90	4¢	26— .94	9- 6-33
	27— .97	3¢	29— 1.04	9- 6-33
	30— 1.08	4¢	31— 1.12	9- 6-33
			32— 1.15	9- 6-33
Elwood (fob ship)	33— 1.03	3¢	37— 1.15	9- 6-33
Torrance	14— .65	1¢	15— .66	9- 6-33
	16— .69	3¢	20— .81	9- 6-33
	21— .83	3¢	26— .98	9- 6-33

*All gravities—flat rate.

DISTRICT	Low Grav.	Dif.	High Grav.	Date
Richfield	15—$ .65	2¢	16—$ .67	9- 6-33
	17— .70	4¢	20— .82	9- 6-33
	21— .85	4¢	22— .89	9- 6-33
	22— .93	4¢	24— .97	9- 6-33
	25— 1.00	4¢	27— 1.08	9- 6-33
	28— 1.11	4¢	29— 1.15	9- 6-33
Whittier-LaHabra	15— .65	3¢	18— .74	9- 6-33
	19— .78	3¢	24— .93	9- 6-33
Montebello	19— .65	1¢	20— .66	9- 6-33
	21— .69	3¢	22— .72	9- 6-33
	23— .76	4¢	24— .80	9- 6-33
	25— .85	4¢	26— .89	9- 6-33
Coyote Hills	16— .65	3¢	19— .74	9- 6-33
	20— .78	3¢	29— 1.05	9- 6-33
	30— 1.09	3¢	34— 1.21	9- 6-33
Santa Fe Springs	21— .72	4¢	22— .76	9- 6-33
	23— .79	4¢	25— .87	9- 6-33
	26— .90	4¢	28— .98	9- 6-33
	29— 1.01	4¢	30— 1.05	9- 6-33
	31— 1.08	4¢	33— 1.16	9- 6-33
	34— 1.19	4¢	35— 1.23	9- 6-33
	36— 1.26	4¢	38— 1.34	9- 6-33
New Hall, McKittrick, Kern River	14— .57		19— .57	9- 6-33
Midway-Sunset, Elk Hills, Buena Vista Hills	17— .57	4¢	18— .61	9- 6-33
	19— .64	3¢	22— .73	9- 6-33
	23— .77	4¢	33— 1.17	9- 6-33
Lost Hills	17— .57	4¢	21— .73	9- 6-33
	22— .76	3¢	30— 1.00	9- 6-33
Coalinga	17— .57	1¢	18— .58	9- 6-33
	19— .62	3¢	21— .68	9- 6-33
	22— .72	3¢	25— .81	9- 6-33
Wheeler Ridge	17— .57	1¢	18— .58	9- 6-33
	19— .61	3¢	25— .79	9- 6-33
Kettleman Hills	33— .93	3¢	39— 1.11	9- 3-33
Pennsylvania				
Bradford	*2.35			2- 4-35
Sw Pa. Pipe Line	*2.02			2- 4-35
Eureka Pipe Line	*1.97			2- 4-35
Buckeye Pipe Line	*1.87			2- 4-35
Corning Grade	*1.32			10- 2-33
Michigan				
Central Michigan	*1.20			9-30-33
Muskegon	*.70-1.00			12-31-32
Canada				
Petrolia	*2.10			9- 9-33
Oil Springs	*2.17			9- 9-33

*All gravities—flat rate.

Summary of Wells Completed in the United States
Week Ending March 2, 1935

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total Completions 1935	Total Completions this date 1934
Alabama	...	...	...	...	.....	1	1
Arkansas	1	...	...	1	.....	36	14
California	24	22	...	2	37,850	122	55
Colorado	...	...	...	...	.....	2	4
Illinois	...	...	...	...	.....	4	1
Indiana	...	...	...	...	.....	30	37
Kansas	17	12	...	5	11,570	209	130
Kentucky	...	...	...	...	.....	16	8
Louisiana	16	11	2	3	2,450	121	116
Michigan	6	3	1	2	305	56	83
Mississippi	...	...	...	...	.....	5	6
Montana	1	1	...	...	62	9	15
New Mexico	9	5	...	4	5,975	48	16
New York	...	...	...	...	.....	...	3
Ohio	23	3	12	8	27	271	180
Oklahoma	30	20	2	8	13,045	348	330
Pennsylvania	1	...	1	...	.....	24	65
Texas	182	138	2	42	517,140	1,761	1,524
Utah	...	...	...	...	.....	...	3
West Virginia	19	1	15	3	3	103	88
Wyoming	1	1	...	...	500	2	6
Total this week	330	217	35	78	588,927	3,168	2,685
Total last week	357	222	37	98	725,160	2,838	...
Total this year	3,168	2,032	301	835	5,836,462	...	...

MAJOR PRICE CHANGES

	Penna. (Nat. Tr.)	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
March 5, 1933	.....	.....	Cut 24.
May 2, 1933	.....	Cut 19.	.....
May 9, 1933	Cut 20	.....	.....
May 22, 1933	Up 10.	.....	.....
June 19, 1933	Up 10.	Up 19.	.....
June 26, 1933	Up 10.	.....	Up 9-12
July 6, 1933	Up 13.	Up 10.	.....
July 17, 1933	Up 15.	.....	.....
July 28, 1933	Up 15.	.....	.....
August 11, 1933	Up 10.	.....	.....
August 24, 1933	.....	Up 10.	.....
August 30, 1933	Up 15.	.....	.....
September 6, 1933	Up 10.	Up 10.	Up 15.
September 8, 1933	.....	Up 15.	.....
May 1, 1934	Up 10.	.....	.....
November 6, 1934	Cut 25	.....	.....
December 6, 1934	Cut 25.	.....	.....
January 4, 1935	Up 15.	.....	.....
February 4, 1935	Up 15.	.....	.....

CRUDE PRODUCTION TAXES

Oklahoma—Three percent of gross value less royalty interest.

Texas—Two cents or 2 percent, whichever is higher.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 percent of gross market values.

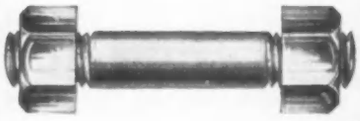
Montana—Three percent of gross value at well and ⅛-cent per barrel.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents per acre on proved oil lands.

KEROTEST
REGISTERED U. S. PAT. OFF.

MINIMUM TENSILE STRENGTH OF KEROTEST BOLTING 125,000 P.S.I.



Proper bolting is most vital on every oil field valve. One of the outstanding features of KEROTEST valves is the extraordinary high tensile strength of the heat-treated alloy studs and bolting.

Actual tests on this material discloses average physical properties as follows:

Ultimate Tensile Strength	136,000 lbs. per sq. in.
Yield Point	124,000 lbs. per sq. in.
Percent Elongation in 2"	17.5
Percent Reduction of Area	62.7

All KEROTEST valve bolting is by means of through studs having accurately cut U. S. form of thread and fitted with milled hexagon nuts on each end.

This is one of the reasons for the excellent record of KEROTEST Valves all over the petroleum world.

KEROTEST
MANUFACTURING COMPANY
Pittsburgh, Pa.

KEROTEST
REGISTERED U. S. PAT. OFF.

Gasoline Storage Increase Mars February Statistics

STATISTICS of the petroleum industry continued relatively favorable during February, although they were not so satisfactory as for several months previously. Marring the new statistics to some extent was an increase in gasoline stocks so sharp as to be cause for some anxiety, even though material building up of those stocks was deliberately planned to take care of higher demand in the spring and summer.

During the month total stocks of finished gasoline at refineries, terminals, and in transit are indicated to have increased more than 6,000,000 barrels. The federal oil administration had authorized increased refinery activity, to permit building up of stocks. But unfavorable weather for motoring throughout much of the country a considerable part of the month tended to accelerate beyond plans the additions to stocks. Also, there continued a substantial volume of unauthorized refining operations in East Texas on illegally produced crude, with the new federal tender board not yet reinstated, to cooperate in preventing shipping of questionable oil and products.

The total stocks of finished gasoline had increased by February 23 to 54,399,000 barrels, according to the American Petroleum Institute, and in the closing days of the month further substantial increase was indicated. By March 2 the total had risen to 55,654,000 barrels. At the beginning of February the amount on hand had been only about 49,000,000 barrels.

Prices Lower

The steady and sharp increase of gasoline in storage and the persisting large volume of hot oil producing and refining in East Texas resulted in weaker markets, wholesale and retail, in February, as compared with preceding months. Prices of gasoline at the refineries were from one-eighth to one-fourth cent per gallon lower in February in all sections of the Mid-Continent. The retail prices continued at depressed levels in Texas and adjoining states, and declined late in the month along the Atlantic coast, under pressure of hot gasoline traffic.

As the month drew toward the close, however, a decidedly more promising outlook was looming with respect to curbing of hot oil producing and refining and to the gasoline markets. With the new federal tender board scheduled to begin functioning in East Texas early in March, under the new Connally Act, strict enforcement in East Texas was in prospect, and the markets before the end of February were displaying pronounced strength. (In the opening days of March the board actually began operating, and the markets have continued to gain strength).

Crude Stocks Increase

Rising stocks were not confined, moreover, to gasoline, but also embraced crude oil. Despite the above-normal runs to stills, with refineries building up gasoline storage as well as supplying current consumption, around a million barrels of crude oil backed up into storage during February, it is indicated. That addition to crude stocks occurred, moreover, despite the fact recorded production was slightly less than the allowable authorized by the oil administration. (Unrecorded production, in the form of surreptitiously produced oil, chiefly in East Texas, was sufficient, however, to push actual output somewhat above the allowable).

The latest complete figure of the Bureau of Mines on crude oil stocks in the country was that of 337,085,000 bar-

Wells Completed in the United States

(Including oil wells, gas wells, and dry holes)

Month	Daily Average
January, 1933	30.0
February	30.6
March	26.6
April	25.5
May	25.6
June	21.1
July	23.1
August	30.7
September	36.5
October	40.9
November	46.9
December	47.7
January, 1934	39.7
February	38.1
March	40.6
April	44.0
May	50.7
June	51.5
July	*53.6
August	51.3
September	43.2
October	49.6
November	49.9
December	48.3
January, 1935	47.9
February	49.6

*Highest since July, 1930, when completions averaged 76.6 daily. Average dropped in August, 1930, to 52.4, and remained below that figure until July, 1934.

Monthly Summary of United States Drilling and Production, February, 1935

STATE	MONTH OF FEBRUARY, 1935						CUMULATIVE, JANUARY-FEBRUARY, 1935					
	Completions	Oil Wells	Gas Wells	Failures	Initial Prod. Bbls. Daily	*Total Bbls. Oil Prod.	Completions	Oil Wells	Gas Wells	Failures	Initial Prod. Bbls. Daily	*Total Bbls. Oil Prod.
Oklahoma	156	89	11	56	233,749	13,403,500	284	175	17	92	383,763	28,489,000
Kansas	80	61	3	16	51,221	3,984,650	160	123	4	33	96,431	8,326,050
Texas	769	568	19	182	2,311,783	28,432,300	1,525	1,097	43	385	4,254,962	59,616,450
Louisiana	51	25	2	24	10,564	3,255,500	110	52	8	50	23,971	6,647,100
Arkansas	17	10	...	7	1,820	864,250	37	21	...	16	4,305	1,838,250
Eastern States	217	74	94	49	2,267	2,932,850	398	127	177	94	3,264	6,145,850
Michigan	24	17	3	4	6,250	1,020,150	51	35	5	11	7,214	1,957,150
Rocky Mountain States	3	2	...	1	142	1,349,500	13	8	...	5	3,237	2,906,950
New Mexico	18	10	1	7	37,590	1,316,100	46	30	3	13	53,390	2,803,700
California	55	48	2	5	46,765	14,010,400	137	101	3	33	109,048	29,485,500
Southeastern States	...	...	...	...	.....	.....	3	...	1	2	.....	.....
Totals	1,390	904	135	351	2,702,151	70,569,200	2,764	1,769	261	734	4,939,585	148,216,000

*Preliminary, subject to revision.

rels on hand at the beginning of January. But the federal government's weekly reports from companies holding 100,000 barrels or more showed 320,570,000 barrels on hand January 26, and an increase to 321,367,000 barrels by February 23.

Crude Production

Recorded production of crude oil in the United States during February was 70,569,200 barrels, or 2,520,328 barrels daily on the average, based on the weekly reports of the American Petroleum Institute. That figure compared with 2,526,100 barrels per day allowed by the federal oil administration. Thus there was recorded underproduction to the extent of nearly 6000 barrels daily. The American Petroleum Institute does not, however, include an estimate for surreptitiously produced oil. Such oil consists chiefly of illegally produced crude in East Texas, and averaged probably around 50,000 barrels daily during February. Thus it is indicated that the oil administration's allowable was actually exceeded around 45,000 barrels daily.

It is significant, in this connection, that stricter enforcement in East Texas began to materialize in the latter part of February, and that virtual elimination of hot oil appeared in prospect as the month ended. The new federal tender board, designed to combat hot oil activities, began functioning as March opened, and has been remarkably successful. The crude oil production control situation has consequently improved greatly, and is expected to prove highly favorable in March.

Drilling Increases

Despite unfavorable weather, weak markets, and unsatisfactory production control, drilling was at a relatively high level in February, exceeding that of January, and surpassing that of February, 1934, about 30 percent.

Wells completed during February averaged 49.6 per day, including oil wells, gas wells, and dry holes. In January the average had been only 47.9 completions daily. In February, 1934, the average was 38.1, and in February, 1933, it was 30.6.

United States Production

(Based on American Petroleum Institute estimates, which do not include oil which may have been surreptitiously produced)

Month	Daily Average (Barrels)	Federal Agency Allowable
Aug., 1933	2,748,100	.....
September	2,568,250	2,413,700
October	2,392,900	2,338,500
November	2,267,243	2,338,500
December	2,266,426	2,210,000
Jan., 1934	2,233,505	2,183,000
February	2,239,070	2,183,000
March	2,339,950	2,282,800
April	2,420,950	2,366,200
May	2,575,380	2,366,200
June	2,588,100	2,528,300
July	2,560,550	2,530,300
August	2,475,300	2,449,300
September	2,431,950	2,341,700
October	2,364,150	2,325,800
November	2,375,400	2,340,300
December	2,414,600	[1]2,307,000 [2]2,460,300
Jan., 1935	[3]2,504,735	2,460,300
February	[3]2,520,328	2,526,100

[1]December 1-16.
[2]December 17-31.
[3]Preliminary, subject to revision.

Crude Oil Stocks

(Since Oil Code Inauguration)

Bureau of Mines figures as compiled monthly, comprising all crude in storage in the country.

At end of:	Total Bbls in storage
August, 1933	360,001,000
September	359,979,000
October	356,885,000
November	355,614,000
December	355,394,000 *354,305,000
January, 1934	353,642,000
February	531,641,000
March	354,067,000
April	354,350,000
May	355,883,000
June	357,239,000
July	355,260,000
August	350,838,000
September	348,937,000
October	346,415,000
November	341,165,000
December, 1934	337,085,000

*On revised basis, 1,089,000 barrels having been transferred from crude to fuel oil in California.

Trend of stocks situation since end of December, figures being from weekly reports to federal government by companies *holding 100,000 barrels or more.*

December 29	322,262,000
January 26, 1935	320,570,000
February 23	321,367,000

Motor Fuel Stocks

(American Petroleum Institute figures, as shown in weekly reports)

Date	Motor Fuels stocks, bbls.
September 9, 1933	50,913,000
September 30	50,457,000
October 28	52,727,000
November 25	51,934,000
December 30	51,580,000
January 27, 1934	50,229,000
February 24	55,976,000
March 24	57,879,000

After March 24, 1934, figures shown represent stocks of finished gasoline, to be marketed as motor fuels, including natural gasoline which has been blended, and gasoline made from refinery still gases.

March 24	57,011,000
March 31	57,098,000
April 28	56,011,000
May 26	54,493,000
June 30	51,405,000
July 28	48,597,000
August 25	46,120,000
September 29	43,850,000
October 27	41,993,000
November 17	*39,892,000
December 1	40,831,000
December 29	43,969,000
January 26, 1935	47,888,000
February 2	49,566,000
February 9	50,840,000
February 16	52,416,000
February 23	54,399,000
March 2	55,654,000

*Low point of year.

1934 Statistics Reveal Price Relationship Discrepancies

WILLIAM J. KEMNITZER
Petroleum Technologist

THE relationship between current supply and demand in the petroleum industry of the United States during 1934 was the best since 1921. Despite this fact, the inequities of curtailment and allocation of domestic production caused considerable controversy as to the best methods and means of production control. Prices, although generally improved over those of 1933, continued at subnormal levels and in abnormal relationships to enhance further the problems of the petroleum industry.

Restriction of domestic production below total demand, permitting utilization of imports and liquidation of stocks in large volumes by a comparatively few integrated organizations, brought forth a storm of protest from so-called "hot oil" producers, who claimed the right to compete for total demand.

With the price of gasoline at the refinery 42 percent below "normal,"[1] while that of crude oil was less than 19 percent below normal, independent refiners protested by being forced to pay a posted price for crude oil so far out of line with the price received for their main product. Likewise, with the wholesale price of gasoline more than 42 percent below normal, the consumer complained that he was not getting advantage of the comparatively low wholesale price, when his price at the service station, exclusive of taxes, was only 15 percent below normal. Such discrepancies did not serve to mitigate the problems of the petroleum industry during 1934. Unless a more reasonable arrangement, conforming to the principles of a competitive system are arranged, a betterment of conditions in 1935 is dubious.

[1] "Normal" is based on the relationship of the item to conditions of supply and demand and the purchasing power of the dollar as existing during the period 1923 to 1926, inclusive.

Demand High

Total demand for all oils in terms of crude oil, during the year, averaged 2,835,000 barrels daily, the highest since 1931 and 6.1 percent above the 2,672,000 barrels of 1933.

The Administrator's order for "consumer demand" (plus natural gasoline and benzol) averaged 2,459,000 barrels daily, or 13.3 percent below the actual total demand. In an effort to compete with that part of the total demand reserved by the Administrator's orders for imports and stocks, domestic production averaged 2,595,000 barrels daily, or 135,000 barrels daily above "consumer demand," but 240,000 barrels daily below the actual total demand.

The domestic output was the highest since 1930, but only 0.7 percent above the 2,578,000 barrels of 1933. Imports averaged 133,000 barrels daily, the lowest since 1918, but higher by 7.3 percent than the 124,000 barrels the year before. Withdrawals from stocks averaged 91,000 barrels daily against additions of 30,000 barrels daily last year.

TABLE 1

Item	1933	1934
Domestic Production	2,578,000	2,595,000
Imports	124,000	133,000
Change in stock	30,000	—107,000
Days' supply in stocks	226	242
Total demand	2,672,000	2,835,000

The days' supply in stocks averaged 208, the least since 1921, and lower by 9.2 percent than the 229 days' supply during 1933.

In Table 1 are the data of supply and demand for 1934 compared with those of 1933 in barrels daily.

Price and Supply-Demand

Following are the data of price and supply-and-demand for the year 1934 compared with those of the previous year, 1933:

The composite price index of crude petroleum and products for 1934 averaged 50.5, the highest since 1930 and an increase of 23.2 percent over the 41.0 of 1933, but 30.3 percent below what the relationship between supply and demand and the purchasing power of the dollar during the assumed normal period, 1923-1926, warranted.

TABLE 2

Item	1933	1934
All-Commodities index	65.9	74.9
Petroleum products	41.0	50.5
Crude oil (per barrel)	$0.64	$0.95
Gasoline (per gallon)—		
F.o.b refinery	4.4c	5.0c
Service station (ex. taxes)	12.8c	13.6c

The price of crude oil averaged $0.95 per barrel, the highest since 1930 and an increase of 48.4 percent from the $0.64 of 1933, but 18.8 percent below normal.

The price of gasoline, f.o.b. refineries, averaged 5.0 cents per gallon, the highest since 1932 and an increase of 13.6 percent from the 4.4 cents per gallon of 1933, but 42.5 percent below normal.

At the service station (exclusive of taxes) the price of gasoline averaged 13.6 cents per gallon, the highest since 1930 and an increase of 6.2 percent above the 12.8 cents per gallon of 1933, but 15.5 percent below normal.

In Table 2 are the data of price for 1934 compared with 1933.

East Texas Control Brings Optimism

(*Continued from page 10*)

day's hours, despite the fact the day was a holiday (Washington's birthday), with both houses wanting to recess early. One Senator later stated that in his 18 years in Washington he never before had seen a bill move so rapidly.

Extraordinary Efforts Involved

THE above speed record was not established, of course, merely through accident. It involved a lot of scurrying and pushing. Credit goes to various individuals for the determined efforts during the eventful day of passage, as well as during the period required in carrying the measure into the conference committee.

Throughout the preliminary and final activity, stood out the efforts of these Texas legislators: Senator Tom Connally; and Congressmen Sam Rayburn, chairman of the commerce committee; Martin Dies, of Orange; and Tom Blanton, of Abilene. Cooperating with them, and urging them to speedy action, were the Washington office of the Independent Petroleum Association of America; Messrs. Fahy, Marshall, and Myers of the federal Petroleum Administrative Board; and others, including a Texas committee, composed of Joe R. Pearson, W. F. Weeks, and P. M. Morgan, sent to the national capital for the purpose by a statewide oil meeting at Dallas February 6.

At the urgent request of the latter committee early Friday morning, February 22, the mentioned Texas legislators undertook the one-day enactment project. Senator Connally called for a Conference Committee session at noon, secured final writing of the bill, got the conference report signed, secured passage of the bill in the Senate by 2:30 p.m., and to save time, sent a copy to the Enrollment and Printer's offices, so the bill would be ready for signature when and if passed by the House.

House Rules Waived

TO bring the conference bill before the House for action without waiting a day, rules required unanimous consent of the 430 members of the House. But such consent was secured, after two hours' effort by Congressmen Rayburn, Dies, Blanton, and William P. Cole, aided by Senator Connally. The bill then passed the House unanimously at 4:30 p.m.

House and Senate then passed resolutions authorizing Speaker Byrns and Vice President Garner to sign the bill that day. Senator Connally arranged holding of the Senate Clerk's force beyond regular hours to have the bill checked. He also arranged for the Vice President and Speaker to remain at their offices until the bill was ready to be signed. By 5:45 p.m. they had signed the bill. Senator Connally immediately had the bill sent to the White House by special messenger, and 30 minutes later went there himself. By 8:00 p.m. he had seen the President, who agreed to sign the bill Friday night, and did so, thereby making the bill a law.

Texas Authorities Effective

DURING the several weeks prior to setting up of the federal tender board, state authorities were remarkably successful in combating hot oil activities. In the week ending February 17, only 390 tank cars of untendered material were shipped out of East Texas, compared with 1036 cars the previous week. During the week ending February 24 the number dropped to 52, and a still further decline was expected for the succeeding week.

It is generally conceded, however, that the Connally oil shipping law was barely passed in time to avert serious weakening of East Texas control. For Texas' Attorney General McCraw was having to do some fancy jockeying to stave off a federal district court decision in the case testing the railroad commission's jurisdiction over interstate oil shipping. And it was regarded by many as a foregone conclusion that the decision would be against the commission.

Nevertheless, the Texas authorities succeeded in doing what was needed to preserve stability in the emergency, and they have consequently heard generous cheering from the grandstands. Especially deserving of the orchids, it is being said, is the new Attorney General McCraw. He has shown lots of pep and ability, the comment runs, and has not permitted the violators to put anything over on him.

Harmony Among State Officials

AT the same time, the railroad commission was doing effective work, aided by the Texas Highway Patrol, and supported by Governor Allred. An impressive circumstance, meanwhile was the apparent teamwork on the part of the governor, chairman of the railroad commission (Ernest O. Thompson), and the attorney general. Combinations of those officers prior to this year were usually characterized by lack of harmony and cooperation.

One potent reason for the present harmony is suggested in gossip heard over the grapevine. There is supposed to be an understanding through which the governor will protect the railroad commission chairman in event the legislature should carry out the old proposal of replacing the railroad commission in oil control matters by a new, appointive oil and gas commission. The arrangement is said to be that the governor would appoint the railroad commission chairman as head of the new oil and gas commission.

New Market Demand Bill Rewrites Statutes

(Continued on Page 15)

became effective last December, there was a provision to this effect, but it has been included here to eliminate possible confusion.

The bill also provides that any person engaged in the oil business may be required by the Railroad Commission to keep records. With all this information to be made public, the public hearings before the commission on tenders, especially in East Texas, will be more informative. In the past some operators have refused to permit the use of this data which they had filed, when their applications for tenders were publicly presented. Ample provisions have been made to permit the state to forfeit charters and demand receiverships of corporations which violate commission regulations, after suits have been tried in the courts. Foreign corporations so convicted would be forbidden the right to do business in Texas. The new bill would eliminate the requirement of publication of any orders for violations of which there are no criminal penalties. Under present statutes such orders must be published, regardless of the nature of the penalty. One provision would allow the commission to issue emergency orders without notice or hearing. At present, ten-day's notice must be given and a hearing held. While most of the law, Senate Bill 21, is included, some radical changes would be made. Probably the most important is the provision that the requirement of tenders might be ordered to apply to certain fields only. As that statute is now drawn, any order of that nature must apply to the state generally and has been an exceedingly heavy burden on the Railroad Commission, with limited forces and finances. East Texas independents who originally opposed the passage of that law, withdrew their objections only when they had been assured that these orders would apply to the entire state. Tenders could be demanded from any person purchasing, acquiring, selling, transporting, refining, processing or handling in any other way, crude oil, natural gas or products thereof. The Railroad Commission would be given the power to force any pipe line company to disconnect from any wells which had produced hot oil, and prevent those wells from producing thereafter. Powers of the commission also would be broadened to allow it to obtain mandatory and prohibitive injunctions upon a showing to the court that an operator is likely to violate commission orders. The district court could be empowered to name receivers for those companies convicted of violating commission orders. The usual provision are included that no part of the bill is to permit operation in violation of the anti-trust laws.

So many and so intricate are the acts covered by this bill that a long battle in both houses is virtually assured. Strong opposition to any plan to increase the powers of the Texas Railroad Commission is certain to arise, and smaller independents are expected to oppose any measure which would allow the courts to throw their business into receivership, as this bill proposes to do. Because of these difficulties, it would appear that the proposed bill must be radically changed, or it is unlikely to be passed. This would leave the Walker market demand bill, which merely extends indefinitely the provisions of the present market demand law, as the most likely to pass at this session.

No Plans Made For Thomas Bill Hearing

Washington, D. C. Requested by Governor James V. Allred of Texas to hold hearings on the oil bill introduced by Senator Elmer Thomas of Oklahoma, members of the Senate Mining Committee this week said that no plans had been made for hearings but that if the Texas governor wished to discuss the matter the committee would hear him.

Members of the subcommittee in charge of the bill, of which Senator Thomas of Utah is chairman, were asked by Governor Allred on the part of Texas opponents of the measure to hold a hearing late this month or early in April.

It is pointed out that hearings were held last year at which it is believed all pertinent information was obtained and it is believed that the Texas officials have misinterpreted the purposes of the Thomas bill, which it is declared will not infringe upon the rights of the producing states.

There is in Congress a general disinclination to go further with oil legislation this session, in order that the Connally bill may have a chance to prove itself. Proponents of the Thomas measure, however, are attempting to procure action pointing out that the Texas statute limiting production to market demand will expire in September.

While aware of the Texas situation and the fact that the law has but another six months to run, Oil Administrator Harold L. Ickes refused to comment on the matter, declaring that it is one solely for decision by the state.

Stripped Gas Must Be Used for Repressuring

Austin, Texas.—Repressuring of residue gas stripped by the Clymore plant in the Agua Dulce field, Nueces, is required in an order issued by the Texas Railroad Commission on March 6. The operator of the plant, Masten Nixon, receiver, was given ten days within which to comply with its provisions.

This action was taken as the result of a hearing which was held in Austin on February 18, at which representatives from the area testified that the continued operation of the plant blowing 45,000,000 cubic feet of gas into the air daily, was not conducive to the public welfare, and asked the commission to revise the order.

The original order permitting the plant to operate required that residue gas be repressured. Subsequently it was modifield to permit operation without repressuring on the basis of representations from local interests that it would be conducive to the public welfare in that the plant would furnish additional employment, and result in the development of the Agua Dulce gas field.

At the last hearing some of the same petitioners informed the commission that no development had taken place and that the labor employed had been imported. They asked that the gas be conserved.

The commission has before it similar evidence relating to the Paramount gasoline plant now operating in the Pledger field, Brazoria County. The history of the orders governing the operation of this plant is similar to that of the Clymore plant.

Court Rules "Fugitive" Crude May Be Moved

San Antonio, Texas.—Texas Railroad Commission will be restrained from stopping the shipping of what is alleged "fugitive" crude, according to an opinion handed down in a hearing before Judge R. J. McMillan in Federal District Court here March 6. The case arose following the refusal of the commission to issue the formal tender order to H. W. McCurley and C. A. Davenport to ship approximately 35,000 barrels of oil from Gladewater in the East Texas field.

Judge McMillan declared that this judgment was in a specific case and was not to be determined as a general decision. It, therefore, is not a loophole for unlawfully produced oil.

The oil is alleged to have been obtained through draining ditches, gullies and ravines in the vicinity of 200 producing wells, 231 pipe lines and 13 refineries in the vicinity of Gladewater. As a result, Davenport & McCurley were unable to show exact origin of the

crude. Commission attorneys attempted to prove that this oil was in addition to the allowed production from the wells in the area, therefore unlawful. L. L. Briscoe, of the federal tender board, added testimony by declaring that in numerous cases in East Texas, oil had been "made" to bubble out of the ground and recovered in the above manner of flowing into ditches.

Counsel for Davenport and McCurley, however, explained that production of many of the wells contain as high as 85 percent salt water to 15 percent oil. In curing the oil, much of it is lost and drained into ditches, where it is picked up by traps.

Davenport declared that he had picked up as much as 650 barrels of oil daily through these traps, this being done without "collusion" with producers. McCurley added that he had sold 32,000 barrels of salvage oil last September, the shipment being made after an injunction had been obtained against the Railroad Commission.

Since the filing of the suit, Davenport and McCurley declared that supply of salvage crude in the tanks had been increased to 38,100 barrels and that 5000 barrels more oil had been accumulated in the open pits, making the total supply slightly in excess of 43,000 barrels.

Texas Governor Discusses Oil Industry Taxation

Austin, Texas.—Governor James V. Allred last Monday delivered his tax message to a joint session of the Texas Legislature. The message covered the subject completely, including revision of present tax measures and additions of new ones. A large part of the message was devoted to taxes on various phases of the oil industry.

An outstanding feature of the statement was the suggestion that if any increase in the gross production tax is passed, it should be done only after the subject has been studied carefully.

When the message was delivered bills were already introduced in the legislature that could carry out the aims of the governor, or could be so amended.

Gross Production Taxes

The governor pointed out that at present Texas is producing 41.94 percent of the crude oil produced in the United States, that it represents not only a "major industry in the state, but the chief natural resource as well." He estimated that within Texas was consumed only 14.51 percent of the crude oil produced here.

"I recommend that the legislature make a careful investigation," he said, "into the present tax on crude oil with the view of equalizing the tax burdens borne by various natural resources of Texas. In levying a tax against crude oil, I believe this legislature should consider the fact that it is subject to depletion and that eventually it will be taken forever from Texas soil. They should consider further the fact that the oil industry is a money making industry even in the midst of these dark days of economic depression. The legislature should consider the fact that about 85 percent of oil produced in Texas is used outside Texas borders.

"We all know that it is impossible to shift a severance tax on oil 100 percent to the consumers of Texas oil in other states, but it can be shifted to a great extent, and this fact should have the consideration of the legislature. I believe that oil, sulphur, and all other natural resources should bear a relatively high part of the state's financial upkeep and that the tax on any particular natural resource should be equalized from a comparative standpoint with the tax levied on all other natural resources. It is impossible to undertake this problem of equalization without a sweeping and careful investigation, and I urge upon this legislature such an investigation, detailed and careful enough that it will ascertain the facts.

"The present tax on crude is two cents a barrel up to $1 in value, and two percent thereafter. Any increase in this tax should be determined by a proper consideration of the factors affecting the sale of petroleum products outside the state. By this I mean that we should not so increase the tax as to place Texas petroleum at a disadvantage in competitive markets also supplied by foreign oil or oil from other states. If the increase is excessive or unreasonable, then independent Texas producers might be forced to absorb an additional burden in disposing of their products to major oil and pipe line companies.

"If, in keeping with this recommendation, the legislature sees fit to increase the tax on crude, it may enable us to affect reductions in the ad valorem rate . . . If the legislature should raise additional revenues from other sources, but not deem it advisable to reduce the ad valorem tax from the level of 77 cents, then I suggest that a portion of the revenues derived from any increased severance tax on oil should be placed in the permanent school fund.

Gas

"Second most important of the natural resources of this state is natural gas," the governor continued. "While it is not possible to know the exact gas production in Texas, it has been estimated that last year there were produced more than 700,000,000,000 cubic feet. Of this, more than 300,000,000,000 cubic feet were blown into the air . . .

"The total tax paid the state on this tremendous production was the miserable sum of $228,956, which included the gasoline tax paid on casinghead gasoline made by stripping the natural gas. The present tax is two percent of the average market value of the gas produced and sold within this state.

"I recommend a flat tax on natural gas of one cent per thousand cubic feet. This should be a severance tax levied and collected from the lessee or purchaser of natural gas.

Pipe Lines

"In 1934, while operating at a loss in the refining and marketing ends of the business, 20 pipe line companies . . . reported to the Secretary of State a total net profit of more than $78,000,000 . . .

"At present Texas collects an ad valorem tax against these pipe lines; and, in addition, an intangible assets tax and one-fifth of a franchise tax—an extremely limited sum. As pointed out above, the net profit of 20 pipe line companies is . . . an average of 25 percent profit in one year upon their investments . . .

" . . . I recommend that a franchise tax of one percent be levied against the gross assets of pipe line companies—both oil and gas—in Texas. Such a tax would yield to the state $1,000,000 annually."

Chain Store Tax (Filling Stations)

The governor recommended that a tax be placed on chain stores operating in the state "high enough to compel foreign chains to pay into the state treasury, sums adequate to discharge their proportionate share of the responsibilities of the state government . . . without reference to whether they are engaged in the business of selling gasoline, lumber . . . or other articles for retail distribution . . .

East Lucien Tests Due for Completion in New Horizon

Perry, Okla.—Stanolind Oil and Gas Company et al's Viets 1, C NW SW 27-20n-2w, 40-acre south offset to the one mile extension of the Lucien pool of southwestern Noble County, had first Simpson sand at 5073 feet with pay from 5094 to 5096 feet and was drilled to 5099 feet where it flowed 2837 barrels in several days and was shut in to await a potential gauge. Daily rate of flow was not reported. Sinclair Prairie Oil Company's Kreithe 1, C SE NE 28-20n-2w, 40-acre west offset to the extension well, topped the first Simpson sand at 5155 feet, the second sand at 5210 feet and had one bailer of water per hour at 5248 feet. It was drilling ahead below 5258 feet with no increase reported. The extension well, Sinclair Prairie Oil Company's Cawood 1, C SW NW 27-20n-2w, was completed in December, 1934, flowing 850 barrels of oil per day from Viola lime at 4970 to 4993 feet. Thus the area has two producing horizons and possibly a third and indications are that it is structurally separated from the main pool.

Drouth Affects Oklahoma Work

Tulsa.—Reports compiled by the weather bureau at Oklahoma City show since November, 1934, that in Oklahoma oil producing counties rainfall has been below normal in 11 counties, above normal in 25 counties and three southwestern producing counties are classified in the drouth stricken area. In the southwestern portion of the state Jackson County, which has led that section in drilling and leasing activity, is in the drouth area along with Harmon, Greer and Beckham Counties into which the Jackson County play has spread. Stephens County, one of the leaders in south central Oklahoma had subnormal rainfall as did Pontotoc and Hughes Counties, the leaders in the general Seminole district. In the central and north central portions of the state Oklahoma and Noble Counties had subnormal precipitation while Logan, Lincoln, Pottawatomie, Garvin and Carter Counties were above normal.

In most of the counties where rainfall is classified as subnormal the drouth has not been of such extent as to seriously handicap development but to some extent this condition may be advanced in explanation of the lack of increased development which had been expected. During the past week new work showed a pick up when scouts made 39 first reports from 16 counties compared to 28 the preceding week. Osage County led with seven starts; Creek County had four; Jefferson, Okmulgee, Pottawatomie and Stephens Counties, three each; Jackson, Lincoln, Muskogee, Okfuskee, Oklahoma and Seminole Counties, two each; and Bryan, Carter, Garvin and Hughes Counties, one each. Twenty oil wells entered the completion stage with a combined initial yield of 13,047 barrels along with two dry gas wells with combined initial volume of 2,750,000 cubic feet and eight dry holes, a total of 30 completions which involved 60,735 feet of drilling, including 781 feet in two old wells. One wildcat test was completed for 25 barrels at 1233 feet.

Logan Test 250 Feet in Simpson

Guthrie, Okla.—Close followers of Shell Petroleum Corporation's Hirzel 1, SE SW SW 7-16n-2w, wildcat test less than one half mile southwest of here in south central Logan County, were willing to mark the test off as a dry hole after it had penetrated more than 250 feet of Simpson formation and found nothing more than slight showings along with salty cores. At 6000 feet the test lost circulation and when last reported operators were mixing mud. No announcement has been made as to plans and it is not known whether deeper horizons will be tested. However, even with the test running low it has not encountered water and might pick up some of the sands which produce from the lower Simpson in the Oklahoma City pool.

Nine miles to the northeast of here Sinclair Prairie Oil Company et al's School Land 1, C SE 26-17n-1w, wildcat discovery well four miles southeast of the Langston pool in eastern Logan County, was deepened from 5265 to 5290 feet where it had a large amount of water and was being plugged back to Simpson dolomite at 5250 to 5260 feet where it had previously yielded at the rate of about 200 barrels per day flowing by heads.

Kingfisher County

Columbia, Okla.—Black Gold Petroleum Company's Cole 1, C SW NE 24-18n-5w, wildcat test one and one half miles east of here and two miles west of the Lovell pool in northeastern Kingfisher County, topped Woodford shale at 6575 feet and was drilling below 6678 feet in Hunton lime with top unreported. It is understood that operators will abandon the test when the contract depth of 6700 feet has been reached if nothing is found in the Hunton.

Britton Townsite Play Gets Stronger

Britton, Okla.—One of the most interesting transactions of the hot Britton townsite play which now is under way was reported during the week when The Texas Company took a lease on a right-of-way of an interurban railway, a tract 3½ miles long and varying from 60 to 70 feet wide through the townsite. Since the rotary derrick now in general use has a 24-foot base and requires a minimum of 26 feet outside the rig corners operators will be forced to string operations parallel to the tracks. Coline Oil Company has taken lease on the Santa Fe Railroad right-of-way which parallels the interurban tracks through the townsite

The city council has passed an ordinance sanctioning the drilling of one well to each block of 48 lots. In recent weeks lots in the townsite have been taken by Sinclair Prairie Oil Company, Slick-Urschel Oil Company, Carter Oil Company, Gypsy Oil Company, Heenan-Coe, Phillips Petroleum Company, Anderson-Prichard Oil Company, Buttram Petroleum Company, Stahl Petroleum Company and The Texas Company. Reports have been made of the intention to drill a community test in Section 32 or 33-13n-3w, inside the townsite but details are lacking other than that contract will be let in the next few days. A $50,000 bond is being required for the drilling of each well.

Pontotoc Test Has Water in Bromide

Jesse, Okla.—Chances for Bromide sand production to the southeast of the Fitts pool in southeastern Pontotoc County were given a setback during the week when Paramount Petroleum Company's Graham 1, SW SE SW 13-1n-7e, encountered top of the Bromide at 3115 feet, the first sand at 3230 feet, the second sand at 3291 feet and drilled to 3302 feet where it had a hole full of water. First water was encountered at 3298 feet. This test has commanded attention for several weeks with its showing in the Atoka formation, Wapanucka series and Hunton lime. It is a minimum of 500 feet structurally higher than the Fitts pool and had been condemned by many geologists due to its location of the upthrow side of a fault on the side toward the Arbuckle Mountains which theoretically would have limited its possible drainage area. Royalty at one time jumped to as high as $400 an acre around the well as it encountered markers several hundred feet higher than in any of the reference tests.

Lynch et al's Thompson 1-A, SW NE

SW 1-1n-7e, one half mile east of here, was pulling 6⅝-inch casing and probably will be plugged back to Hunton lime from which it is yielding from 50 to 60 barrels per day through a bradenhead. Top of the Bromide sand was logged at 4503 feet and the test drilled to 4659 feet. A shot of 165 quarts at 4300 to 4380 feet collapsed the pipe and operators were unable to satisfactorily swage it out. Hunton lime was logged from 3820 to 4109 feet.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARTER COUNTY—		
H. Chamberlin, McGrill 1-A, sw sw se sw 17-4s-2w	28	1520
COMANCHE COUNTY—		
Jones et al, Bowin 1-A, ne ne ne se 29-2n-9w	*	330
Westheimer & Daube, Watson 3, sw ne ne 24-2n-10w	12	1239
C. L. Green, Trope 1, nw ne nw se 32-2n-10w	*	472
CREEK COUNTY—		
Curtin Oil Co., Sandlin 2, ce½ sw ne 6-17n-10e	*	2218
Johnson Oil & Refining Co., Mann 1, se nw se 32-19n-9e (otd 2373)	30	2939
JEFFERSON COUNTY—		
Bridwell Oil Co., Seay 3, nw sw nw ne 30-6s-5w	7	1530
Wohlgmuth 5, cel ne nw 30-6s-5w	26	1521
Farlyn Oil Co., Seay 27, sw sw ne se 3-7s-5w	25	1053
Seay 28, nw nw se se 3-7s-5w	25	1233
MARSHALL COUNTY—		
R. A. Godfrey, Burge 9, se se sw se 25-7s-5e	7	530
F. H. E. Oil Co., Snell 4, nw sw nw nw 31-7s-6e	12	509
G. L. Priest, Cope Sublett 2, sw nw se ne 1-8s-5e	40	539
MUSKOGEE COUNTY—		
Steckoll & Vierson, Lewis 13, nw sw ne se 20-15n-14e	*	1870
OKFUSKEE COUNTY—		
Hillcrest et al, Mingo 1, sw se nw 28-10n-10e	*	3240
Kilpatric, Durant 1, cnl nw ne 35-11n-11e	¶2½	2345
OKMULGEE COUNTY—		
Steiger & Hazlett, Fields 1-A, cnl nw ne 33-12n-14e	¶¼	672
OSAGE COUNTY—		
West Central Oil Co. 9, cw½ se 22-22n-11e	35	1776
Lewis & Texas, Kenny 4, ne se sw 9-24n-7e	100	2696
Empire Oil & Refining Co. et al, Lessert 1, ne sw nw 2-25n-3e	*	3576
PONTOTOC COUNTY—		
Crosby, D. Hardin 4, se sw ne 30-2n-7e	575	4230
Stanolind O&G Co., A. J. Hardin 6, nw sw sw 30-2n-7e	8196	4202
Dixon Pet. Co., Jackson 2, nw sw sw 22-5n-6e (otd 1760)	*	1975
POTTAWATOMIE COUNTY—		
Magnolia Pet. Co., Nona 2, sw se nw 11-7n-4e (pb 3960)	555	3964
Jones "B" 1, nw nw ne 18-7n-4e	589	3854
Gates 1, nw sw nw 20-9n-5e	150	4235
SEMINOLE COUNY—		
Empire Oil & Ref. Co., Myers 4, nw se ne 31-7n-8e	2512	4207
STEPHENS COUNTY—		
L. Sykes, Franklin 6, nw se se se 18-1s-8w	80	1840
Bishop Oil Co., Parker 1, nw nw nw se 11-2s-8w	*	2222
TULSA COUNTY—		
Basinger, Withers 1, se se se se 25-17n-12e	43	2331

*Failures; †Junked; ¶Million cu. ft. gas.

Kansas Activity Steadily Increasing

Wichita, Kansas.—Kansas operators predict more activity during 1935 than during any other year in the history of the state's oil development. At present development is concentrated in the Burrton-Haury pool of northeastern Reno County, the several new pools of Russell County and in several relatively new pools in Rice County. Exploratory development is scattered throughout the west central portion of the state and so far no indication of a let up has been shown.

For the first time in several years Russell County jumped into the lead in new production when during the past week three wells added 4152 barrels initially. Reno County was second from the production viewpoint with 4015 barrels from three wells and Rice County was third with 3046 barrels from three wells in the Grove area. These three counties were responsible for nine of the 12 oil wells completed in the state for total initial of 11,568 barrels. The reports also included one cellar and ponds abandoned and four dry holes, a total of 17 completions which involved 49,000 feet of drilling including 112 feet in one old well.

Rice and Russell Counties were tied for the lead in new work with six first reports each; Reno County had four; Cowley County, three; Harvey County, two; and Barton, Butler, Greenwood, Rush and Sedgwick Counties, one each, a total of 26 starts compared to 24 during the preceding week.

Rush County

LaCrosse, Kansas.—Lario Oil & Gas Company and Phillips Petroleum Company's Benbow 1, NW NE NE 12-17s-19w, wildcat test 4½ miles northwest of here in western Rush County, topped Topeka lime at 3100 feet, set eight-inch casing at 3140 feet and topped Lansing lime at 3397 feet, where drilling was discontinued to run six-inch casing. Nearest production is in the Otis gas field, 17 miles to the southeast.

Stone Pool Gets Good Producing Well

Hutchinson, Kansas.—Blair and Hartman and Rose Spring Drilling Company completed their second producer in the Stone pool of eastern Reno County when Carmichael 1, SW SW SW 10-24s-4w, came in flowing 1048 barrels in 48 hours through 2½-inch tubing from 3385 feet in Mississippi lime.

Shell Petroleum Corporation's Hoskinson 1, C E½ 9-24s-4w, wildcat test three miles south of production in the Burrton-Haury pool and one half mile north of the Stone pool, was coring below 3945 feet in Siliceous lime topped at 3847 feet. It will be either abandoned or plugged back to Mississippi lime to test a showing of oil.

Sinclair Prairie Oil Company's Harner 1, NE NE SW 14-23s-4w, a recent completion in the Burrton-Haury pool of northeastern Reno County, placed itself in the gusher class during the week when it flowed 6029 barrels in 24 hours from Hunton lime drilled to 3614 feet.

Trego County

Wakeeney, Kansas.—D. R. Lauck and Leo Hansa, Wichita operators, staked location for Ignatz Lang 1, SE SE NW 1-14s-21w, a wildcat test approximately 15 miles southeast of here in southeastern Trego County. Hansa holds a 14,000-acre block in the area and the test is being drilled on the basis of subsurface geology and seismograph.

Gasoline Plant

Crescent, Oklahoma.—Eason Oil Company of Enid, Oklahoma, is increasing its gasoline plant capacity in the Crescent pool of western Logan County by the addition of two 265-horsepower twins and one 80 horsepower single compressor units. Eason now takes all the gas from the field.

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BUTLER COUNTY—		
Phillips Pet. Co., Harden 1, ne ne sw 11-24s-3e	*	2600
COWLEY COUNTY—		
Routh et al, Holt 6, sw nw se 12-32s-4e (pb 2633)	*	2644
McPHERSON COUNTY—		
Lario Oil & Gas Co., Miller 2-B, nw sw nw 6-20s-1w	84	3427
Shell Pet. Corp., P. A. Koehn 3, ne sw ne 16-21s-3w	271	3410
RENO COUNTY—		
Barnsdall Oil Co., Sabin "B" 7, ne se ne 11-23s-4w	1577	3615
Marathon Oil Co., Van Sickle 3, se se nw 23-23s-4w	1902	3610
Gypsy Oil Co., Krehbiel 5, csw ne 35-23s-4w	536	3370
RICE COUNTY—		
Gypsy Oil Co., Callis 1, nw nw nw 28-19s-9w	857	3251
Texas Co., S. W. Grove 5, nw nw ne 29-19s-9w	1152	3210
S. W. Grove 6, se sw ne 29-19s-9w	1037	3203
RUSSELL COUNTY—		
Liggett, Stewart 1, ne se se 17-11s-15w	201	3243
Lario Oil & Gas Co., R. W. Burns 1, csl nw nw 34-13s-12w	*	3425
Palmer, Steinle 3, cw½ w½ sw 22-13s-14w	1848	3278
Carey, Streaker 1, nw nw sw sw 27-13s-14w	cellar & ponds	abd.
Tom Palmer, Killion 3, nw sw nw 27-13s-14w	1506	3281
Smoky Hill Oil Co., Miller 1, nw ne ne 31-14s-13w . (otd 3043)	597	3155
Hartman Oil Co., Swartz 1, se sw ne 8-15s-14w	*	3321

*Failures; †Junked; ¶Million cu. ft. gas.

Camp Hill Prospects Are Improved by Second Test

Palestine, Texas.—Unusually high structural position registered by Gulf Production Company's Mary J. Ross 1, second test for the Camp Hill area, southwestern Anderson County and about four miles northeast of Elkhart, in penetrating the Woodbine sand at 4749-4800 feet, carrying odor and stains of oil, indicated a big gas well in the making. Operations were halted at 4800 feet late last week to make a drill stem test, with prospects considered bright for a gas well, if not an oil producer. This test is about one mile south of the company's recently completed discovery well, which yielded only salt water in the Woodbine, but made a big gasser with spray of high gravity oil when plugged back to the Sub-Clarksville sand. The latter horizon is not productive in other Woodbine sand areas in East Texas, except for a few small wells in the Van field.

Gulf Production Company is in a tight spot and somewhat pressed for time to protect five or more of its short term leases in the center of its Camp Hill block. This accounts for the setting up of light rigs to start drilling operations on several of the tracts promptly.

The Woodbine section was topped at 4749 feet, or 4265 feet below sea level, in the Mary J. Ross 1, which is located in the most southerly southwest corner of 54.7 acre tract, Robert Erwin Survey, Pecan chalk was logged at 3766-3970 feet, and Austin chalk at 4509-4692 feet, with the Eagleford shale section between the latter and the Woodbine thinned to a thickness of only 57 feet. The odor and taste of oil appearing in cores taken at the Austin chalk-Eagleford shale contact was not tested.

The company's discovery well on the Camp Hill structure recorded a high structural position for the general area on all key formations, but is more than 300 feet lower on structure than the second test. The producer was completed on the Tucker Royall-M. A. Davey 174-acre tract, NWc of M. Rogers Survey, late in January rated at 10,000,000 cubic feet of wet gas daily, with closed in pressure of 1850 pounds on casing. Production was developed from Sub-Clarksville sand section in the top portion of the Eagleford shale, which was 118 feet in thickness. Pecan chalk was logged at 3890-4220 feet, and Austin chalk at 4875-5058 feet, with an elevation of 572 feet. First Woodbine was logged at 5176 feet, or 4604 feet below sea level, and it yielded salt water when tested at intervals in drilling to Georgetown lime at 5948-5969 feet. The hole was plugged back to 5059 feet for the gas production, which was later drawn upon in supplying fuel for the drilling of the second test. Spray of oil followed, and increased to 20 barrels daily.

Exploration of a wildcat block in the southwestern part of Anderson County and about five miles southwest of Elkhart was scheduled to start late this week through a joint enterprise by Gulf Production Company and Humble Oil & Refining Company. Location is in the northwest corner of the O. G. Rogers 267½-acre tract, Daniel Parker Survey.

Simms Oil Company and Clark & Cowden were drilling last week below 550 feet on a Freestone County wildcat, about four miles east of Teague, to test the Woodbine horizon before

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Atlantic, C. Young-Belrice 5-D (40-ac)	9000	3690
Brogan O&G Co., T. O. Wright 5 (4.64-ac)	7800	3726
B. Cockburn & Boase, A. Green 11 (37.3-ac)	3500	3765
Cron & Gracey, A. S. Jarvis 6 (41.11-ac)	4500	3692
Ralph E. Fair et al, B. F. Maxwell 11-A (87.41-ac)	4500	3745
Great States Oil Co., M. E. Smith 2 (5.76-ac)	480	3666
Gulf, E. E. Thrash 8 (83.56-ac)	8600	3797
Guthrie Oil Corp., Frederick 2 (21.65-ac)	720	3600
W. B. Hamilton Pet. Co., L. A. Gambrell 9 (54.7-ac)	5400	3692
Humble, Jas. Juller 12 (115.66-ac)	9500	3683
Ida Holt 13-C (99.63-ac)	6800	3754
Jessie White 5 (43-ac)	7000	3730
F. F. Wooster 8 (50-ac)	8000	3805
Hunt Prod. Co., J. P. Maxwell 1 (22-ac)	80	3600
Marathon, H. F. Griffin 8 (65.61-ac)	480	3707
R. G. Mason 13 (105.53-ac)	7000	3664
T. W. Medlin-Doran & Jackson, Mayfield 3 (82.91-ac)	9800	3810
Rusk Crude Oil Co., J. W. Wheelis 3 (5-ac)	8500	3792
Sea Gull Oil Corp., E. A. Thrash 3 (3.46-ac)	5500	3698
Sinclair Prairie, D. Wright 24 (152.1-ac)	9200	3728
R. G. Wright 16 (107.62-ac)	8400	3683
A. L. Slaughter & J. G. Kugle, Frederick 1 (2-ac)	360	3573
Stanolind, R. F. Russell 5 (35-ac)	6000	3764
Stanolind-Pure Oil Co., R. J. Burton 16 (154.67-ac)	3000	3602
Sun, J. J. Denton 4-B (37.96-ac)	6000	3753
J. A. Layne 10 (103.7-ac)	7300	3772
KILGORE AREA—		
Barnsdall Oil Co., J. Douglas-Shell 11 (137.93-ac)	7000	3656
DeArman & L. O. McMillan, Robersen-Shell 9 (100¾-ac)	5500	3673
Gulf, C. Brown 41 (263.52-ac)	7200	3516
S. Hilburn 73-A (80.74-ac)	6500	3577
A. A. King 8 (55.64-ac)	1000	3583
A. Muckelroy 22 (152.05-ac)	6000	3586
Will Oten 5 (48½-ac)	150	3652
Invincible Oil Co., M. B. Weiss 27 (81.27-ac)	11,000	3627
Kirby Pet. Co., J. Reddic 11 (81-ac)	4600	3725
Magnolia, Jess Blackman 4 (19.91-ac)	10,500	3636
R. H. Rowland 4 (12-ac)	360	3600
W. H. Matthews et al, L. Martin 3 (20-ac)	7600	3714
Producers Inv. Corp., J. A. Butts 4 (11.41-ac)	8000	3595
Restal Drl. Co., Britton 1-A	500	3677
A. E. Roscoe et al, C. E. Christian 2-B (5.94-ac)	8600	3600
Shell, B. F. Laird 22-A (211.31-ac)	8000	3558
J. B. Watson 43 (285.2-ac)	9800	3652
Sinclair Prairie, M. T. Cole 51 (666-ac)	4000	3608
M. T. Cole 52 (666-ac)	7000	3628
M. T. Cole 53 (666-ac)	7000	3617
Stanolind-Simms Oil Co., A. W. Miller 3 (100¼-ac)	4600	3590
A. W. Miller 4 (100¼-ac)	5300	3593
Stantex Pet. Co., L. B. Morse 5 (11.28-ac)	9200	3628
Texas Co., W. Davis 10 (64-ac)	4500	3560
Wheelock & Collins, D. Wells 14 (120-ac)	3000	3610
Woodley Pet. Co., Joe Ladd 7-A (50-ac)	10,000	3610
LONGVIEW AREA—		
Altantic & J. K. Wadley, M. Turner 25 (161.57-ac)	10,500	3650
J. G. Beard et al, J. M. Farrell 7 (43-ac)	3600	3610
Catlett & Francisco Oil Co., O. B. Trottman 1 (38/100-ac)	9200	3515
Empire G&F Co., A. Green 10 (67.21-ac)	10,200	3647
FHE Oil Co. et al, J. M. Christian 4 (7.56-ac)	8000	3680
Gulf, Tom Clemmons 7 (55.13-ac)	5800	3706
W. A. Ray 9 (813.73-ac)	200	3601
O. L. Hickman-S. K. Baird, L. Graves-Rio 11 (106½-ac)	7000	3614
Humach Oil Co. McGrede-Lechner 8 (39.9-ac)	9600	3648
Humble, W. R. Hughes 35 (245.6-ac)	9300	3685
I. D. Smith 30 (245.98-ac)	7000	3645
Magnolia, H. L. Foster 15 (100.68-ac)	9000	3578
R. B. White 14 (81-ac)	8200	3550
Roeser-Pendleton, Inc., Nicholson 7-B (75-ac)	7600	3604
Selby O&G Co.-Lewis Prod. Co., Snavely 16-D (105-ac)	7500	3597
Shell, E. G. Richey 22 (167.38-ac)	8400	3572
Sinclair Prairie, M. Moncrief 39 (307.7-ac)	10,000	3600
M. Moncrief 40 (307.7-ac)	10,500	3614
M. Moncrief 42 (307.7-ac)	10,500	3607
M. Moncrief 43 (307.7-ac)	11,000	3610
Sun, W. L. Fuller 5-A (50-ac)	3600	3690
T. C. Ramey 7 (86.54-ac)	500	3772
Texas Co., S. J. Boles 5 (25-ac)	8500	3627
G. H. Vaughn Prod. Co.-Magnolia, R. R. Collins 8 (45-ac)	9000	3700
ANDERSON COUNTY (Cayuga Field)—		
Tide Water & Texas Seaboard, Mrs. N. N. Wills 16-A (832.29-ac)	3600	4095
VAN ZANDT COUNTY (Van Field)—		
Pure Oil Co., Mary Neill 7 (100-ac)	250	2966
I. D. Miller 8 (60-ac)	10,000	2960
Wise-Jackson & Florence Oil Co., Sanger 2 (50-ac)	3000	2926
HENDERSON COUNTY—		
Pioneer Explo. Co., Ann Gentry 1	*	4256

*Failures; †Junked; ‡Million cu. ft. gas.

rentals on the 4000-acre block are due. Location is in the northwest corner of the W. H. Goolsby 50-acre tract, J. A. McAnulty Survey. The project is about two miles southeast of a recent failure drilled by Pete N. Wiggins and L. I. Dodson et al on the Pasadena tract, J. Graham Survey.

Cayuga Extended

Extension of the oil producing horizon of the Cayuga field across the Trinity River into eastern Freestone County became virtually assured when Amerada Petroleum Corporation's H. Berk 1, situated in southeast part of 1057-acre lease, E. G. Rector Survey, cored six feet of oil sand topped at 4019 feet, with an elevation of 255 feet. Seven-inch casing has been cemented on top of the sand. The test is a west offset to the Trinity State Oil Company's completed river bed well, which took in 10 feet of sand in drilling to a sub sea depth of 3762 feet.

The Kosse area, Limestone County, wildcat of J. Edwards Mills, Fort Worth, and associates on the J. B. Hunt 34¾-acre tract, Israel Woods Survey, has shut down to cement casing after failing to obtain a successful drill stem test in the Woodbine sand horizon at 3578-3637 feet. The owners report evidence of oil saturation in the sand, and were forced to run pipe for a production test because of cavings. This wildcat is on a 10,000-acre block, with contract to drill to 4500 feet, and it is located about 3½ miles east of the late Col. A. E. Humphreys' discovery well on the Jones tract, which ceased to produce after yielding 33,000 barrels of oil in eight days. It was drilled in 1922, and blew in at the 3767-foot level.

Two-Year Jail Term For Alleged Tapping

Longview, Texas.—Two-year jail term was assessed here March 7 against Harry Hunter, Kilgore refiner, by a district court jury for alleged tapping and withdrawal of crude from Gulf Production Company's Culver lease, situated near the defendant's plant, which is operated as Roco Refining Company. Prosecution was based on a special act of the legislature in 1933, making it a felony to tap pipe lines. Council for the convicted refiner has filed notice of appeal.

Eastland, Texas.—Quota of dry holes in West Central Texas was held to a low level last week when the district accounted for 18 completions, with only five failures. There were 12 oil producers, having a combined initial yield of 798 barrels, and a gasser rated at 5,250,000 cubic feet daily, included in the list of completions.

West Texas Test Now Holds World's Deep Drilling Record

San Angelo, Texas.—Record drilling depth honors were regained by Texas on the morning of March 4 when Gulf Production Company's J. T. McElroy 103, Upton County, passed the 11,377-foot level, which was attained by a test in California. Drilling had progressed to the 11,410-foot level on the Upton County test late last week, cutting a 6 11/16-inch diameter hole. The last bottom hole temperature reading taken at 10,630 feet recorded 150 degrees Fahrenheit. The company is seeking production in the Ellenberger section of the Ordovician lime, which produces at the 8300-9000-foot level in the Big Lake field. Skelly Oil Company et al's University 1-D, southern Reagan County test seeking the same goal, has progressed below 9450 feet after cementing 7⅝-inch pipe at 9439 feet.

Locations for two new tests in the Tubb area, western Crane County, were announced last week. Gulf Production Company is moving in materials to drill M. B. McKnight 1, C SW SW Section 9, Block B-21, PSL Survey, about 4¾ miles northeast of its small wildcat producer held jointly with Cranfill Brothers Oil Company, Dallas. The latter has made location for J. B. Tubb 1, SWc Section 11, Block B-27, about 1¾ miles southeast of the producer, having obtained acreage from Humble Oil & Refining Company and others. The Ordovician lime horizon is the projected goal of Gulf Production Company's W. N. Waddell et al 1, C NW NW Section 4, Block B-27, with operations underway below 3360 feet. It is about 2¼ miles northwest of the Tubb producer. This new activity is largely due to many lease contracts expiring within a year.

Two semi-wildcat tests in northern Crane County and north of the inactive Waddell pool were showing for producers last week. Wahlenmaier et al's Kloh 1, SWc E½ SW¼ Section 33, Block 44, T-3-S, is preparing to run pipe to test lime at 3315 feet. Gulf Production Company's W. N. Waddell 9, C NE¼ Section 11, Block B-23, PSL Survey, topped oil horizon at 3370 feet, and was carrying 1500 feet of oil in hole while drilling at 3415 feet.

Gulf Production Company's White-Baker 4, SWc N½ Section 46, Block Z, T. C. Ry. Survey, situated 1¼ miles east of the company's discovery well on the White-Baker ranch, Pecos County, has been plugged after testing sulphur water in lime at 1886-90 feet, with an elevation of 2770 feet. Only a small show of oil was found at 1858-64 feet, which correlates with the oil horizon in the discovery well. The company has made location for White-Baker 5, NEc Section 88, Block 194, GC&SF Ry. Survey, about 2¼ miles northwest of the producer. The discovery well is making 15 barrels daily at 1824-26 feet. International Petroleum Corporation, Fort Worth, is drilling a south offset, while Cardinal Oil Company, San Angelo, is nearing an interesting depth on a diagonial southeast offset.

Drilling of two wildcats in Sutton County by independents will likely result from lease deals made recently. W. M. Lyle of Houston is reported to have contracted to drill a 4000-foot test for a block centering on T. C. Ry. Survey, Block A-9, and H. E. & W. T. Ry. Survey, Block "B". Stebenger and Baker are credited with having contracted to drill a 2500-foot test in the latter block.

Lease trading in eastern Terrell County and in general vicinity of the shut-in gas well on the M. H. Goode land, SWc SE¼ Section 26, Block 161, GC&SF Ry. Survey, has been reported lately. Marathon Oil Company acquired the discovery well and block from the Transcontinental Oil Company, and is credited with planning to deepen the well to the Ordovician lime horizon. Goode 1 attracted interest in February, 1931, when it gauged 6,250,000 cubic feet of dry gas from Pennsylvanian lime at 5606-12 feet. It was later deepened to 6120 feet, resulting in the volume of gas declining to about 2,000,000 cubic feet daily. Humble Oil & Refining Company recently paid $6000 cash bonus for leases on about 2260 acres in Block 161 and also Block "R", T. C. Ry. Survey.

Fisher Discovery Well Pumps Oil and Water

San Angelo, Texas.—Initial pumping test given Tide Water Oil Company and Merry Brothers & Perini, Inc.'s M. Howard 1, north central Fisher County wildcat, credited the well with making 175 barrels of oil and 140 barrels of salt water during the first 24 hours. The second 24 hours it made 265 barrels of oil and 64 barrels of water. It marks the beginning of a new high gravity oil producing area for the

east border of the Permian Basin, and is situated about seven miles northwest of nearest production in the Royston field. Howard 1 drilled into the porous lime horizon early last February at 3672-3677 feet, while carrying water in hole from upper portion of the lime. The well flowed by heads, but failed to kick-off when 6⅝-inch pipe was lowered from 3468 to 3514 feet. Swabbing tests revealed the presence of bottom-hole water, and the owners plugged back to 3672 feet from 3677 feet, then deepened to 3774 feet.

Approximately 9600 acres surrounding the producer on the Howard land, which is located 1320 feet from the north and 660 feet from the east lines of Section 180, Block 2, H&TC Ry. Survey, are held under lease by the discovery companies. Tide Water Oil Company holds three-quarter interest in the well and block.

Operations are to be started shortly on a second test for the block. This new location will likely be less than one mile to the east or southeast.

Magnolia Petroleum Company has been the most active purchaser of leases adjoining the discovery block. Phillips Petroleum Company also has acquired protection in the area, having paid $10 per acre cash bonus for lease on the NW of Section 96, H&TC Ry. Survey, Block 1. Day Brothers of Rotan, Texas, and associates plan to drill a test about 10 miles to the north in the Double Mountain area, southwestern Stonewall County, having procured leases on about 12,800 acres, centering on Section 345, Block 2, H&TC Ry. Survey.

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CROCKETT COUNTY—		
Humble, Mrs. S. E. Couch 1	*	1850
ECTOR COUNTY—		
Gulf Prod. Co., University 6	250	3700
Sunray Oil Co.-Llano Oil Co., E. J. Jones 3	100	3670
FISHER COUNTY—		
Gen'l Crude Oil Co., T. E. Willingham 4	195	3116
HOWARD COUNTY—		
Owen M. Murray et al, Davis-Hall 2	175	2820
JONES COUNTY—		
W. J. Rhodes & Barnsdall Oil Co., M. E. Wood 1	20	1970
Texas Inland O&G Co. et al, H. Sayles 1-A	*	1918
PECOS COUNTY—		
Cardinal Oil Co., Tippett-Tidal 6-D	15	520
Gulf, White-Baker 4	*	1890
Stanolind, Tippett-Dixie 11-B	150	526
TAYLOR COUNTY—		
J. B. Dunigan & Shall, A. W. Hunter 3	10	2425
WARD COUNTY—		
Gulf Prod. Co., O'Brien 52	15	3100
Sid Richardson et al, Johnson-Sun 17-B	150	2590
Johnson-Sun 18-B	815	2590

*Failures; †Junked; ¶Million cu. ft. gas.

West Central Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BROWN COUNTY—		
S. C. Herring et al, J. H. Fry 1.....	15	1840
Sher-Ritt Oil Co., A. Leatherwood 2-B	*	1200
COLEMAN COUNTY—		
Arcadia Ref. Co., S. M. Russell 1....	4	1453
A. E. Eppenauer Drl. Co., L. Shields 2	125	1895
EASTLAND COUNTY—		
L. E. Dickerson et al, T. F. Murrell 1	4	1328
Lone Star Gas Co., J. E. Kincaide 3.	¶5¼	3438
SHAKELFORD COUNTY—		
Charter Oil Co., Morris-Buie 7.....	35	1608
Dean & Adkisson et al, W. P. Newell 4	375	1441
Dobbs Oil Co., Alexander 1	*	940
Gilman & McMurry, E. A. Jeter 1, Sec. 16	*	1213
Knight et al, E. A. Jeter 9.....	15	1201
Owens-Snebold & FHE Oil Co., Reynolds-Gulf 6	30	1216
Reliance O. & Roy. Co.-Jones-Stasney, G. R. Davis 1	60	1623
J. H. Nail 4	*	1510
Roeser-Pendleton, Inc.-Conoco, W. I. Cook 50-A, Sec. 61	100	1228
T. K. Simmons et al, B. C. Harvey 9.	15	1276
Texas-Central Oil Co., J. W. Earhart 1	20	755
STEPHENS COUNTY—		
TP Coal & Oil Co., Lee 6.....	*	2100

*Failures; †Junked; ¶Million cu. ft. gas.

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
M. M. Bradley et al, Carrie Threat 1, blk 90	*	1125
Continental Oil Co., Falls County 10-B	50	1124
Cullum & Alexander, Falls-Gulf 14, blk 14	60	1134
W. B. Hamilton Pet. Co., Cartwright 18	*	1195
Luther Hedrick et al, J. H. Robertson 1	*	1507
Maxson & Panhandle Ref. Co., Green 34-B	25	1108
F. C. Green 35-B	70	1116
Perkins-Cullum Oil Co., Falls 140, blk 11	50	1140
Falls 141, blk 14	55	1118
Falls 145, blk 14	45	1113
Ray & Staniforth, T. B. Wilson 13..	175	1603
Russell & Wilson, H. O. Prideaux 17	9	680
White & Duncan, Prideaux 2.....	*	742
CLAY COUNTY—		
L. F. Hooker et al, L. S. Wright 1, sec 2632	*	919
COOKE COUNTY—		
Kewanee O&G Co., R. J. Timmis 20-A	25	1202
Pace & McClure, Mrs. W. Franklin 1	*	1819
M. T. Smith & Son Drlg. Co., A. E. Roberts 1	*	1507
Wesnant & Patton, J. C. Whaley 1	*	1527
JACK COUNTY—		
Miss Alta Bloodworth et al, J. M. Bloodworth 1	*	342
D. R. Sewell et al, J. H. Shown 1..	*	400
THROCKMORTON COUNTY—		
Consolidated Oil Co.-Pet, Prod. Co., W. H. Portwood 1-C	*	1450
WICHITA COUNTY—		
H. Andrews et al, A. A. Honaker 1	*	585
F. C. Baldwin et al, Grace Jennings 1, sec 8	*	2060
L. T. Burns et al, R. W. Porter 1, sec 32	*	1675
C. W. Clark et al, 1st Nat'l Bank 4-B, blk 44	50	1236
Geo. Proctor et al, J. B. Honaker 1, sec 1	*	1345
YOUNG COUNTY—		
Nichols et al, J. P. Logan 1, blk 24	*	525

*Failures; †Junked; ¶Million cu. ft. gas.

Coleto Creek Gets Outlet for Gas

San Antonio, Texas.—Houston Oil Company has entered the Coleto Creek field, Victoria County, as a gas buyer, giving a much needed outlet to the gas from the high gas/oil ratio wells in the area. This market should bring about a quick development of the two shallow high-pressure sands.

The extent of the deal is not known, but it is understood that Houston Oil Company will tie all gas producing wells into a gathering system, which will connect with the main trunk line between Houston and the Mirando District.

A number of excellent producers have been completed to date, but the quantity of gas produced to each barrel of oil has prevented production under the allowed gas waste.

Two wells were in process of completion and the thrd was on production during the week. All are in the 2800-foot sand. Nutex Oil Company's J. Zimmer 4, R. Manchola Grant, is good for 75 barrels per day through ⅛-inch choke, showing 1150 pounds working pressure. Plummer Drilling Company's E. Terrell 4 (1C) has a fishing job at 2805 feet. It attempted to blow out and a string of five-inch casing was set inside of the seven-inch. Additional trouble was encountered when high pressure damaged the screen and it had to be pulled. In re-working the well, part of the equipment was lost in the hole. It likely will be finished within the next day or so. Jones & Cargey (Comet Oil Company) are completing Prybil 1. It was cleaning through a ⅛-inch choke, showing 750 pounds working pressure, at last reports. It is making oil, gas and drilling fluid.

Lopena Outpost Test Finds Thick Gas Sand

San Antonio, Texas.—Venture Petroleum Company's Ildefonso Ramirez 1, southeast outpost well in the Lopena field of Zapata County, cored 272 feet of gas formation from 2084-2356 feet. With the exception of a break of shale and shells from 2304-34 feet, it was solid sand. The well was bottomed in sand, the thickness of the remainder of the section being unknown. Casing has been set about 100 feet in sand.

This is one of the thickest sand sections ever cored in the Mirando district and indicates the prolificness of Mount Selman formation, from which this well is showing for a large gas well.

On the extreme northwest side of the field and nearly two miles north-

west of this well, Nordan & Morris' C. Vela 1 topped the gas sand at 2055 feet and had cored approximately 200 feet of sand late in the week and was still in sand.

The Vela well is 660 feet from southeast line and 1320 feet from the northeast line of Block 6, re-plat of Porcion 20, while the Ramirez test is 990 feet from the northeast and northwest lines of Block 1, Por. 18.

Both wells are supposed to have had an odor and taste of oil, but likely will be only gassers. Six other gassers have been completed in the area one mile wide and two miles long. They have taken from 20 to 150 feet of producing horizon, but none have drilled as deep as the last two tests, both which were in quest of oil.

Morrison's Vela 1 and Venture Petroleum Company's L. Ramirez 1, both in Porcion 20 and on the northeast side of the field have been making a little distillate along with the gas, indicating oil somewhere on the flank of the structure.

Loma Novio Feld

San Antonio, Texas.—Humble Oil & Refining Company apparently has another large producer in the Loma Novio field of Duval County. Ruiz Estate 2, Section 553, tested 2500 feet of oil in 20 minutes and has set casing at 2791 feet. It had sand at 2805-16 feet.

Gonzales County

San Antonio, Texas.—Southwestern Development Syndicate's W. S. Atkinson 1, two miles south of Thompsonville, in Gonzales County, is drilling at 2460 feet. It has an elevation of 384 feet. Carrizo sand was topped at 1095 feet and Wilcox at 1284 feet. It now is near the top of the Midway. The well is a 6000-foot test.

Mykawa Hearing

Austin, Texas.—The Texas Railroad Commission has scheduled for March 11, a hearing on the Mykawa field, Harris County.

Consideration will be given to all rules for operation in that field which are now in effect.

E. W. O'BRIEN, editor of the Southern Power Journal of Atlanta, Georgia, was the guest speaker at a luncheon given on Saturday, March 2, by members of the Mid-Continent section, Petroleum Division of the American Society of Mechanical Engineers. The speaker talked primarily on efforts now under way to combine engineering societies into one organization.

Three Barbacoas Area Wells Are Showing

San Antonio, Texas.—Three wells are showing for possible producers in different sands in the Barbacoas area of Starr County. Two may provide extensions to the present zones, while the third may open an entirely new area two miles east of present production.

Lester & Duffield, Inc. and R. H. Vice et al's E. B. Carruth et al 1, cored a gas sand at 2882-91 feet, which tested dry on drill stem test. It cored deeper, however, showing oil saturation from 2891 to 2903 feet. It now is waiting on casing, which will be set before the well is tested again.

The well is located 3690 feet from the south line and 3300 feet from the west line of Share 1-B, Porcion 91-92, 2 miles east of production.

It was drilled to 4017 feet, and an electric formation testing device run, which indicated a possible producing sand at 2883-2917 feet. After plugging back to 2832 feet, it was sidetracked and drilled to the present level. Elevation is 295 feet, derrick floor.

Merren, Johnson & Bond's Starr County Cattle Company 4, NE S 20 acres Block 24, Porcion 89, had a gas sand at 2730-35 feet and an oil sand at 2735-41 feet. A drill stem test was attempted, but the seat gave away. The result, however, was 1650 feet of mud cut with a little gas and oil, the test lasting 20 minutes. Further testing will be attempted.

More than a mile south of the field, Conway and Emanuel (carried by some as Armstrong et al) tested 20 thribles of mud, water, oil and a show of gas on a drill stem test of a sand at 2705-11 feet and a string of 4½-inch casing has been set to test. The well previously tested salt water in the regular sand stopped at 2572 feet, after casing has been set at 2570 feet.

South Texas Shallow Wildcatting Increasing

San Antonio, Texas.—A spurt of new activity is evidenced in the shallow wildcat territory of Milam, Travis, Bastrop and Williamson counties, where a number of small, but profitable serpentine plugs were opened last year.

Williamson County is getting the bulk of the new wildcat tests, most of them headed for prospective plugs at around 1000 feet. Byersville field also is active with three rigs running.

Calhoun County

San Antonio, Texas.—Continental Oil Company has made location for its second well to be drilled on the block near Seadrift in Calhoun County. It is American National Realty Company 2, located in the center of NE NE Section 6, Block c, nine miles south of Seadrift. The well is 850 feet northeast of No. 1, which was abandoned just short of 7000 feet after heaving shale prevented further drilling.

HENRY LEA, geologist for Rio Oil Company, Fort Worth, was a San Antonio business visitor during the week.

Increased Drilling Is Expected in Samfordyce Area

San Antonio, Texas.—Ten rigs were running in the proved area and two close in wildcats were active in the Samfordyce field, Starr and Hidalgo counties, as the week closed. Forty oil producers and four gassers have been completed thus far with a material increase expected within the next several weeks as a result of the new tests.

The field continues to be widened to the southeast and the northwest. Hill and Hill, Inc.'s C. E. Smith 1, Tract 3-B, Porcion 41, southeast outpost well, is in process of completion at 2760 feet. It has gas sand at 2744-50 feet, sandy shale 2750-56 feet and oil sand 2756-60 feet, setting casing at 2756 feet. Several wells in the northwestern portion of the field have the sand and are completing.

Navarro Oil Company's Seabury et al 3, Tract 256, Porcion 38, finally was completed as a gas well. It drilled to 2772 feet, tested water and oil, plugged back, sidetracked and re-drilled, finally stopping at 2768 feet. Several attempts to complete resulted in gas wells, the final completion showing a slight spray of oil.

Reserve Development Company's Seabury 2, Tract 256, Porcion 38, flowed four barrels per hour through ⅛-inch choke on tubing, showing working pressure of 250 pounds and closed in casing pressure of 200 pounds. It had sand at 2765-72 feet, showing no upper gas sand.

About 3500 feet northwest of production, and in Starr County, E. B. Van Huss et al's Garcia Land and Cattle Company 1, Porcion 100, cored a total of 4½ feet of sand from 2785½-90 feet, showing a little oil and gas and is coring deeper. It appears as though the sand is pinching out in this direction, the section being

mostly shale and streaks of sand and sandy shale.

A little more than a half mile farther west, W. F. Lacy et al are building derrick for G. M. Abney 1, 330 feet west line of Porcion and about 4800 feet south of the state highway.

D. D. Oil Company's Brock and Showers 1, Lot 8, Block 9, Vista Hermosa subdivision, Porcion 80, 15 miles northwest of Mission, and in Hiladgo County, which created a bit of excitement several weeks ago with a reported saturated sand at 3056 feet, is now coring at 2810 feet in sidetracked hole.

Outpost Tests Hold Bruni Townsite Interest

San Antonio, Texas.—With practically all inside locations drilled, attention is being turned to the outer rim of the Bruni townsite area of the Cole field, Webb County, for new extensions.

Tide Water Oil Company entered the field with an outpost location, its first operation in the area. The well is located in the west corner of a 500-acre A. M. Bruni tract and is in Section 7, just southeast of American Liberty Oil Company's A. M. Bruni 1C, which also has added a little acreage to the proved area. The Tide Water tract is the old Associated Oil Company lease and lies east of the present producing zone of the 3400-foot sand.

American Liberty Oil Company's Bruni 1-C showed an initial flow of 12 barrels per hour through ⅛-inch choke from sand at 3365-3405 feet, casing set at 3397 feet.

Cole Petroleum Company's Benavides 90, most northeasterly well in the field, showed salt water in the regular sand at a total depth of 3419 feet and was plugged back to 2280 feet, where it made a 20,000,000 cubic foot gassser with 600 pounds rock pressure.

O. W. Killam's A. M. Bruni 32, Block 28, Survey 8, south of production tested salt water in the upper gas sand, indicating that it was running low and may not make a producer in the 3400-foot horizon.

Sun Company apparently has another good producer on its 80-acre lease in Section 5, Bruni 6, Block 15, cored sand at 3417-29 feet and set casing at 3400 feet.

A couple of miles south of the field, Frank McMillin's A. M. Bruni Estate 1, SE Section 77, is drilling at 2319 feet.

San Angelo, Texas.—Completions in West Texas the past week involved 11 oil producers, and three wildcat failures in Crockett, Pecos and Jones Counties. An aggregate of 1895 barrels of new production was gained by the district from these wells, with Ward County the heaviest contributor.

West Tuleta Test Will Go to Yegua

San Antonio, Texas.—Edwin M. Jones' D. E. Robinson 12, SW SE Section 5, most northwesterly well in the West Tuleta field, Bee County, tested gas in the Pettus sand and is drilling ahead to the Yegua in an effort to establish production at that level. The sand was topped at 3926 feet (minus 3577 feet) and showed gas in the first 54 feet of sand. A drill stem test at 3980-90 feet, however, developed salt water.

Blanco Oil Company and Al Buchanan's P. Perez 3-A, SE Section 9, southeast flank of the field, tested the Cole sand at 3149-91 feet, showing 200 feet of oil, 50 feet of mud and 15 pounds pressure in 15 minutes and is drilling ahead to the Pettus sand. This probably is the best showing thus far obtained in the Cole sand in the West Tuleta field. Two producers have been completed at this level, but making small wells after plugging back and perforating casing. No fair test, however, has been given this horizon.

Several producers were added during the week in the Pettus sand. Edwin M. Jones' D. E. Robinson 2, Section 5, is good for 300 barrels at 3949-57 feet, where casing is perforated. Houston Oil Company's Straus 3, Block 2, Section 20, is about a 150-barrel well at 3970 feet. Mills Bennett's Tuleta Mercantile Company 2, SW Section 10, flowed at the rate of about 325 barrels per day from 3904 feet. Tuleta Oil Company's Skinner Harris 4, W NW Section 10, is a completion, but gauge is not reported.

New McMullen County Pool Appears Probable

San Antonio, Texas.—A new Jacob sand producing area or definite establishment of a second oil horizon in the Calliham field, McMullen County, is expected to result from the showing in Witherspoon Oil Company's H. L. Lark 1. The well was making a fair volume of gas and spraying some oil late in the week, indicating a commercial producer when finally completed.

It is located 160 feet from the south and east lines of Block 110, Lark subdivision of the E. W. B. Scrugham Survey, nearly a half mile north of the Calliham field and about three miles south of Jacob field production. Jacob field is producing from the horizon of this new well, but the Calliham field's oil is coming from a sand several hundred feet shallower. About a year ago, Hall et al's Lark 1, in the north end of the Calliham field, showed for a producer in the Jacob sand, but efforts to complete it failed.

The Witherspoon test had sand at 1021-26 feet, is bottomed at 1027 feet and has 6⅝-inch casing set at 1018 feet. It was blown through one-inch choke on the casing in an effort to complete, but the well would not clean itself, although it did make some gas and sprayed a little oil. Tubing has been run and it will be swabbed through the tubing. The well is not expected to exceed 25 barrels per day initial, but its importance is that it may open another excellent shallow producing spot for McMullen County.

South Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BEE COUNTY—		
Mills Bennett, Tuleta Mercantile Co. 2, se sec 10 (W. Tuleta)	325	3904
Dirks Bros., M. H. Milster 1, 990 ft el, 4290 ft nl of C. B. Shain sur	*	3750
K. F. Hasselman, Sparrow 1, blk 4, ne sec 20 (W. Tuleta), pb and perf 3115-37	25	4042
Houston Oil Co., Strauss 3, blk 2, nw sec 20 (W. Tuleta)	150	3970
Edwin M. Jones, D. E. Robinson 2, sw sec 5 (W. Tuleta), pb and perf 3949-57	300	3967
BEXAR COUNTY—		
N. G. Carter, E. & T. Ruiz 1, 165 ft sl and el 82-ac tr, F. Rolen sur No. 48, owwo	*	1672
McPhee & Briggs, R. Carter 1, 160 ft nel, 2635 ft sel M. de Leon sur	*	....
Richcul Oil Co., C. Hoch Heirs 5, J. M. Baerrera sur (Von Ormy)	4	765
C. Hoch Heirs 6, J. M. Baerrera sur (Von Ormy)	4	780
DUVAL COUNTY—		
Magnolia Pet. Co., Hahl-Southland 13, nw sec 61 (Gov't Wells)	275	2325
Reynosa Oil Co., Lundell 2, ne ne sec 60 (Gov't Wells)	*	2342
Windsor Oil Co., Cummings 4, sec 44 (Gov't Wells)	50	2295
HIDALGO COUNTY—		
King-Woods Oil Co., W. M. Doughty 1, 3750 ft wl, 1214 ft nl, sh 90, San Salvador del Tule gr	*	6010
Maxwell & Young, King 1, 175 ft nl and el lot 8, blk 1, Alamo sub, sur	*	875
Navarro Oil Co., Seabury et al 3, tr 256, Por 38 (Samfordyce) sdtr and dr to 2768	¶20-20	2771
Reserve Dev. Co., Seabury et al 2, Tr. 256, Por 38 (Samfordyce)	225	2772
REFUGIO COUNTY—		
Hewitt & Dougherty, M. F. Lambert 16, blk 14, Hardwick sur (Greta)	180	3518
Humble O&R Co., Tom O'Connor 10C, N. S. Crunk sur (Greta)	600	4372
STARR COUNTY—		
Sunray Oil Co., S. Sanchez & Bro., 540 ft wl, 1110 ft sl, sec 344, (Arroyo Grande)	*	4015
VICTORIA COUNTY—		
Nutex Oil Co., J. Zimmer 4, R. Manchola grant, (Coleto Creek)	75	2820
WEBB COUNTY—		
American Liberty Oil Co., A. M. Bruni Est. 8-A, sec 6, Foltz sub, Arispe gr (Cole-Bruni townsite)	*	....
A. M. Bruni Estate 1-C, sur 7, Arispe gr (Cole-Bruni townsite)	450	3405
Cole Pet. Co., Benavides 90, Calagham Homestead tr (Cole-Bruni townsite) pb 2280	¶20	3419
WILLIAMSON COUNTY—		
Seggern et al, Clyde Linder 1, 3600 ft nel, 220 ft sel S. Woodrugg sur No. 5	*	1650
ZAPATA COUNTY—		
Cliff Dirks, Hinnant 1, 750 ft sl, — ft wl, blk 16, sur 116 (Mirando Valley)	*	1562

*Failures; †Junked; ¶Million cu. ft. gas.

Chittim Gas Field Is Unusual Producing Locality

RICHARD A. JONES
Geologist

SOME of the deepest gas wells in the Mid-Continent and Gulf Coast have been drilled in Maverick County, Southwest Texas. Eagle Pass, the county seat of Maverick County, is on the banks of the Rio Grande, approximately 150 miles southwest of San Antonio. Across the river to the south is the Mexican town of Piedras Negras, Coahuila. Del Rio, Texas, also on the Rio Grande, is about 60 miles upstream, or northwest, from Eagle Pass.

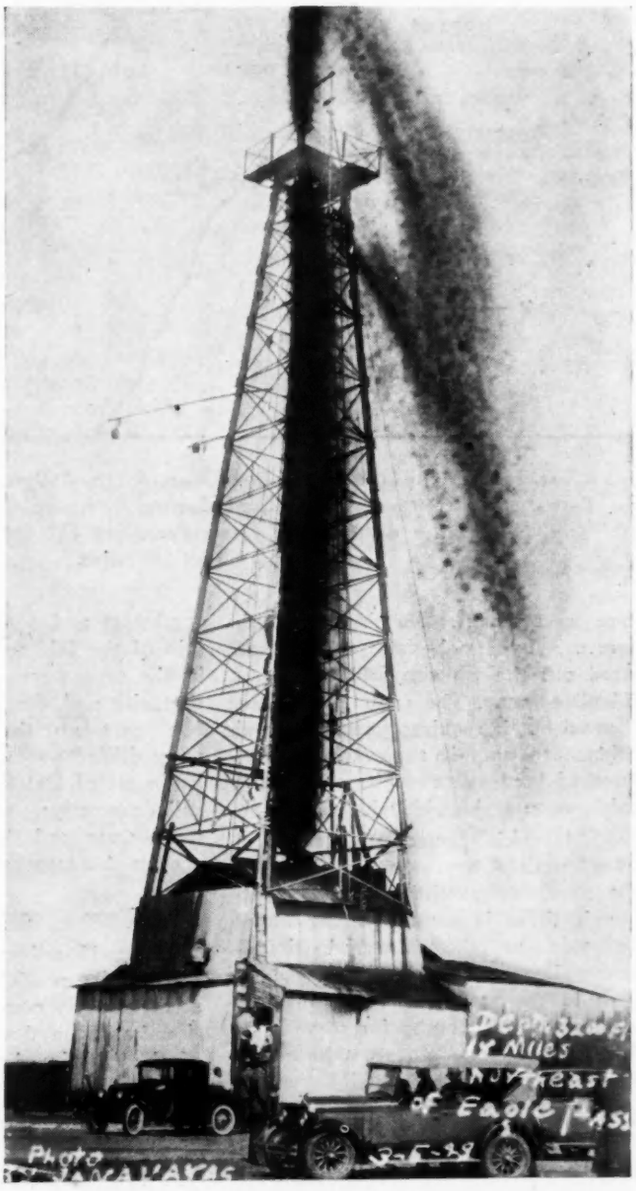
Geologically, Maverick County is near the head of the Rio Grande Embayment, a great arm of the ancient ocean in which were deposited immense thicknesses of Cretaceous and Tertiary sediments. The rocks that form the surface of the county belong to various formations. In the northwest end of Maverick County the Austin chalk outcrops; and progressively younger formations appear as one travels toward the eastern and southeastern borders of the county. The Escondido formation, the youngest Upper Cretaceous in Texas, crops out over an extensive area east and south of Eagle Pass. In the extreme eastern part of the county is an escarpment of Midway limestone of Eocene age, which trends almost north and south and crosses the Rio Grande at White's Bluff. East of the Midway scarp is sandy country underlain by Wilcox strata.

The elevation of Maverick County varies from 600 feet along the Rio Grande to around 1000 feet on the northern line of the county, adjoining Kinney County. There are in many places steep, rocky bluffs fringing the Rio Grande but the greater part of the county is gently rolling prairie. In Mexico, south of the Rio Grande, however, are various mountain ranges not many miles from Eagle Pass and Del Rio, such as the Sierra del Burro.

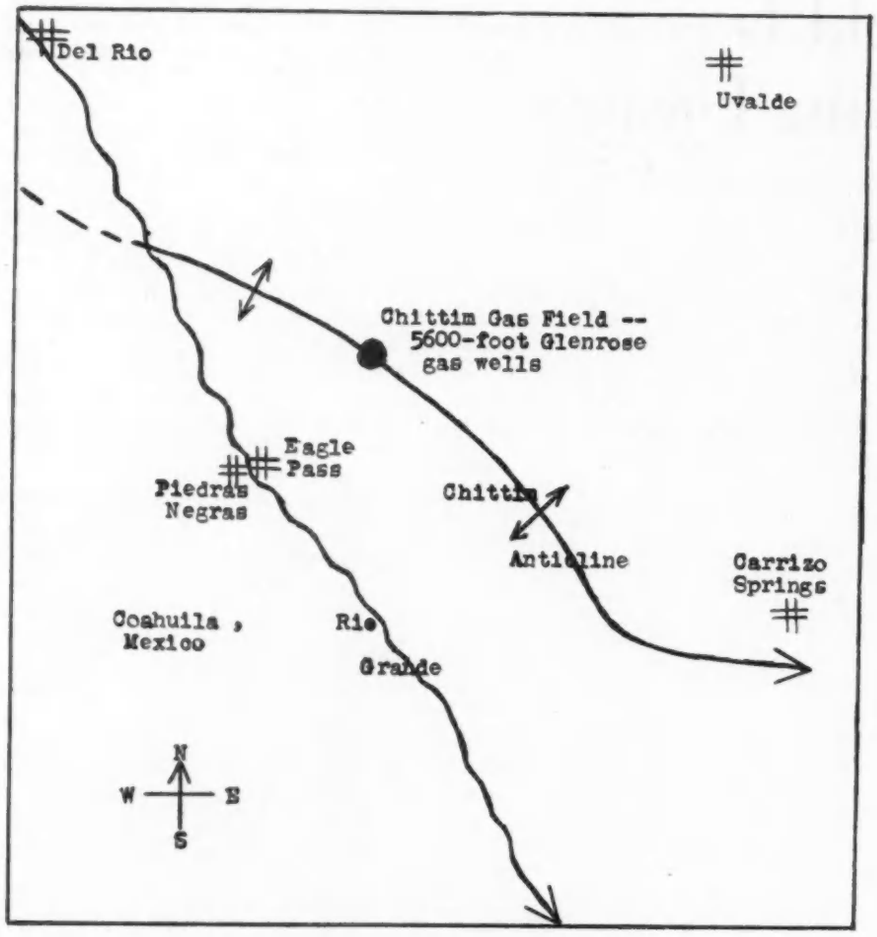
Chittim Anticline

A large anticline, called the Chittim Anticline, extends entirely across Maverick County and is its most prominent structural feature. This regional fold enters the county at the northwest corner, plunges to the southeast, continually younger strata being exposed on the summit of the anticline. It passes north of Eagle Pass and leaves the county about 25 miles east of that city. From this point it still continues, although bending more to the east, toward Carrizo Springs in Dimmit County. Some years ago Humble Oil & Refining Company drilled some deep tests on the eastward extension of the anticline near Carrizo Springs.

J. A. Udden, formerly director of the Bureau of Economic Geology, Austin, Texas, 30 years ago mapped the Chittim Anticline, which derives its name from the Chittim ranch. The fold is shown on the surface by large southeast-trending noses or salients of the Upson clay, and the San Miguel, Olmos, and Escondido formations, all of Upper Cretaceous age. The writer has never mapped the Chittim Anticline, although he has done considerable geological work in southeastern Maverick County along the Midway lime-



Rycade's Chittim 3, Maverick County, Texas, on March 5, 1929, when it was going over the top from 3205 feet, where for 36 hours it flowed at the rate of 150 barrels daily from the Georgetown limestone. The gravity of the oil in the Georgetown was 44 degrees. The hole was later deepened to 6535 feet and plugged back to 5520-5590 where 12,000,000 cubic feet of gas was developed in the Glenrose lime.



Sketch map showing Chittim Anticline, Maverick and Dimmit counties, Southwest Texas. The Chittim gas field, producing from the Glenrose limestone at 5600 feet, is 15 miles northeast of Eagle Pass, and the length of the anticline in Texas is about 70 miles.

stone escarpment. He is informed, however, by geologists who have traced out the Chittim fold that it is difficult to map. The structure can be followed but it requires great care and patience to map it accurately on account of inadequate exposures in the prairie country in which it lies.

In Maverick County the anticline has a length of approximately 50 miles in a northwest-southeast direction, although there is some bending along the axis at the Maverick-Dimmit county line, as previously stated, it turns to the east. The fold continues on into Dimmit County for some 15 or 20 miles, the writer does not know exactly how far, as it gradually dies out to the east in the region south of Carrizo Springs.

Thus, in Maverick and Dimmit Counties the Chittim Anticline has an extent of around 70 miles, showing it to be a major geological feature. The anticline is related geologically to the mountains and structural lines below the Rio Grande in the Mexican state of Coahuila, nearly all which trend northwest and southeast; and the origin of the fold probably is in Mexico in the area west of Del Rio, between that city and the Burro Mountains. A few years ago Ohio-Mexican Oil Company drilled some deep wells in Mexico, west of Del Rio, if the writer recalls correctly; and it is possible that these tests and the Chittim Anticline are on the same general trend.

Deep Glenrose Gas Wells

About 15 miles northeast of Eagle Pass, in the north central part of Maverick County, commercial gas production has been developed on the crest of the Chittim Anticline at 5600 feet. The gas is found in the Glenrose limestone of Lower Cretaceous or Comanche age. Thirteen tests were drilled by Rycade Petroleum Company on the Chittim and Sullivan land, all within a radius of a few miles. Following are the records of these tests:

Rycade Petroleum Company's Chittim 1, southwest corner of Section 116. Elevation, 831 feet. Completed in 1926. This test made 28,000,000 cubic feet of wet gas daily and a considerable amount of high-gravity oil, estimated at 40 to 50 barrels per day; but was abandoned on account of the drilling tools becoming lost in the hole. The producing horizon in the Glenrose was from 5520 to 5580 feet. Total depth, 5640 feet.

Chittim 2, northeast quarter of Section 158. Abandoned in February, 1929, at total depth of 7635 feet. At the time of completion Chittim 2 was one of the deepest holes ever drilled in Texas.

Chittim 3, a location north of Chittim 1, Section 116. Completed about May, 1930, for 12,000,000 cubic feet of gas daily from the Glenrose lime at 5520 to 5590 feet. A good showing of 44 gravity oil was also found in the Georgetown at 3205 feet, flowing by heads for 36 hours at the rate of 150 barrels daily. Total depth, 6535 feet.

Chittim 4, east half of Section 104. Abandoned at 5523 feet.

Chittim 5, southeast quarter of Section 115. Completed about June, 1931, for 7,500,000 cubic feet of gas per day from the Glenrose at 5540 to 5572 feet. It is said that the gas from this well tested three gallons of gasoline to each one thousand cubic feet of gas. Total depth, 5572 feet.

Chittim 6, north of Chittim 3, Section 116. Completed for 4,500,000 cubic feet of gas daily from 5525 to 5570 feet. About 70 barrels of 65 gravity oil or distillate per day was produced with the gas. Approximate total depth 5600 feet.

Chittim 7, lost around 3200 feet.

Chittim 8, abandoned at approximate total depth of 5800 feet. At this writing the author does not have the survey locations of Chittim 7 and 8.

Rycade Petroleum Company's Sullivan 1, south half of Section 90. Abandoned at shallow depth of 1600 feet, and derrick skidded to drill Number 2.

Sullivan 2, short distance east of Sullivan 1, Section 90. Abandoned in January, 1928, at 5510 feet.

Sullivan 3, southwest quarter of Section 71. Abandoned March, 1929, at 5481 feet.

Sullivan 4, near center of Section 112. Abandoned in November 1929, at 5792 feet.

Sullivan 5, Section 82. Abandoned at 7500 feet. Although somewhat shallower than Chittim 2, which reached 7635 feet, Sullivan 5 penetrated older strata.

As will be seen from the preceding information, four gas wells have been completed in this area near Eagle Pass, which is known as the Chittim field. Chittim 1, the largest well, good for 28,000,000 cubic feet daily, was lost; and at present there are three produc-

ing gas wells, Chittim 3, 5, and 6. These three wells are close together, within a circle of one half mile in diameter, in Sections 115 and 116. The Sullivan tests lie to the northwest of the Chittim wells. The structural contours obtained from subsurface data confirm the surface evidence of the Chittim Anticline.

Without doubt the Chittim Anticline is largely responsible for the concentration of gas, as the producing wells are all on the summit of the fold. It is, however, the opinion of Charles W. Fowler, geologist, Milam, Building, San Antonio, who is well informed concerning the geology of the Chittim field, having been closely connected with the drilling of several of these deep wells, that fracturing and varying porosity in the Glenrose limestone also are an important factor in the gas production. For example, Chittim 1, Section 116, the lost discovery gas well, made 28,000,000 cubic feet; and Chittim 3, a north offset, made only 12,000,000 cubic feet of gas daily. In fact, the production of all the wells varies greatly, as Chittim 5 and 6 produced respectively 7,500,000 and 4,500,000 cubic feet per day. This variation in the gas production of wells, all close together and producing from the same lime horizon, would seem to indicate that the amount of gas was largely controlled by the porosity of the Glenrose at different well locations.

The gas rights of the Chittim field were taken over some years ago by Texas Gas Utilities Company which now operates the field. This company has a ten-inch line, 16 miles in length, from the Chittim pool to Eagle Pass; and a similar line, 58 miles long, from the field to Del Rio. Natural gas is supplied by these pipe lines for industrial and domestic purposes in the two cities. It is reported that Texas Gas Utilities is going to build a new six-inch gas line, 32 miles in length, to supply gas from the Chittim field to various cities of the Winter Garden district, such as Uvalde, Carrizo Springs, and Crystal City. This new line will connect with the company's gas line at present supplying these towns from the shallow Cow Hill field in Zavalla County. In the preceding description of wells, all the Chittim and Sullivan tests are listed under the operations of Rycade Petroleum Company; but it is the writer's understand- that Chittim 6, 7, and 8 were really drilled by Texas Gas Utilities Company. The rock pressure of the wells in the Chittim field is approximately 2000 pounds.

To date the only commercial production from the Glenrose formation is the gas in the Chittim area; but there is no reason why large amounts of oil and gas should not somewhere be found in the Glenrose limes.

Driller's Log
of
Rycade Petroleum Company's Chittim 2

I. & G. N. Survey, Block 7, Section 158, Elevation 745 feet.

	Bottom
Black shale	60
Brown sand, oil show	64
Blue shale	765
Chalk	1190
Gray limestone	1250
Chalk	1645
Limestone	1850
Limestone and shale	1970
Limestone	2385
Limestone, show oil	2459
Gray limestone	2502
Very hard limestone	2516
Gray limestone	2617
Blue shale	2896
Limestone	3635
Sandy limestone, water	3645
Sandy limestone	3675
Salt	3695
Black limestone	3900
Gray limestone	3980
Water sand	4000
Sandy limestone	4030
Limestone	4035
Black limestone	4154
Gray limestone, showing oil and gas	5130
Gray limestone	5310
Brown limestone	5455
Gray limestone	5510
Blue limestone	5625
Brown limestone	5650
Gray limestone	5665
Brown limestone	5755
Black limestone	5795
Gray limestone	5810
Brown limestone	5887
Black limestone	5938
Brown limestone	6178
Black limestone	6188
Gray limestone	6203
Sandy limestone	6217
Gray limestone	6232
Brown limestone	6800
Black limestone	7083
Brown limestone	7100
Black limestone	7200
Black limestone	7588
Sandy limestone	7620
Black limestone	7635TD

Great Thickness of Cretaceous

Accompanying this article is the driller's log of Rycade Petroleum Company's Chittim 2, the test with the depth of 7635 feet. It will be noted that below 2896 feet, which is the base of the Del Rio clay, the bit penetrated to the bottom of the hole almost 5000 feet, to be exact 4739 feet, of practically solid limestone. The only way by which the immense thickness of lime rock encountered in the wells of the Chittim field could be divided correctly into the Lower Cretaceous or Comanche formations was by the most careful study and examination of cores and well samples by paleontologists under the microscope. Harold C. Vanderpool of Rycade Petroleum Company did much of this work and has published a paper on the subsurface strata of Maverick County—"The Cretaceous Section of Maverick County, Texas," Journal of Paleontology, 1930.

Following is an interpretation and division into Upper and Lower Cretaceous formations of the rocks recorded in the log of Rycade's Chittim 2, taken from "Maverick County (Mineral Resources of Texas)" by F. M. Getzendaner and published by the Bureau of Economic Geology at Austin, Texas. It may be mentioned that the formations down to and including the Eagleford belong to the Upper Cretaceous series. The formations below the Eagleford are of Lower Cretaceous age. The San Miguel beds and the Upson Clay correspond approximately to the Taylor marl in the region to the east.

San Miguel formation, 0 to 64?, thickness 64 feet, (greater part of formation eroded away).

Upson Clay—64 to 765, thickness 701 feet.

Austin Chalk—765 to 1850, thickness 1085 feet.

Eagleford—1850 to 2459, thickness 609 feet.

Buda Limestone—2459 to 2617, thickness 158 feet.

Del Rio Clay—2617 to 2896, thickness 279 feet.

Georgetown Limestone—2896 to 3695?, thickness 799 feet.

Edwards Limestone—3695? to 4525?, thickness 830 feet.

Glenrose Limestone—4525? to 7588, thickness 3063 feet.

Trinity—7588 to 7635, thickness penetrated 47 feet, but hole abandoned in top of the Trinity.

As is seen above, all the Cretaceous formations thicken greatly in Maverick County in comparison with the Edwards lime oil producing area to the east in Caldwell ando Guadalupe Counties. The Austin chalk, for example, in Chittim 2 was over one thousand feet thick. The Eagleford is only about 30 feet in thickness in Bexar County, near San Antonio, but in Chittim 2 it was over six hundred feet thick. An interesting fact in the record of Chittim 2 is the occurrence of a bed of rock salt, 20 feet in thickness, between the depths of 3675 and 3695 feet, near the contact of the Georgetown and Edwards limestones. The greatest thickening of any of the Cretaceous formations is shown by the Glenrose which in Maverick County consists of approximately 3000 feet of gray, black, and brown limestone.

The Trinity or Basement Sands were penetrated for a considerable thickness in Rycade Petroleum Company's Sullivan 5 and the formation was found to consist of gray sandstones, variously colored shales, and thin-bedded

limestones carrying flint. The character and age of the rocks beneath the Lower Cretaceous of Maverick County is at present unknown.

The gas wells in the Chittim field, as already noted, produce from approximately 5600 feet, from a porous limestone between the depths of 5520 and 5580 feet on an average. The top of the Glenrose is believed, as shown in the interpretation of the log of Chittim 2 given above, to be at approximately 4525 feet. The gas-producing zone of the Chittim field would then appear to be about one thousand feet into the Glenrose, that is, around one thousand feet below the top of the formation.

Gulf Coast A. P. I. Will Meet March 19

Houston.—The Gulf Coast chapter of the American Petroleum Institute division of production will hold its regular monthly meeting in the Chamber of Commerce auditorium at 7:30 p.m., Tuesday, March 19.

An interesting program has been arranged. The feature paper will be "Reconditioning of Gulf Coast Wells", by W. R. Reddick of Gulf Production Company. Another paper will be on rotary drilling mud. It has been prepared by George E. Cannon and J. W. Graybeal, engineers with Humble Oil & Refining Company. J. C. Stokes, Reed Roller Bit Company, will deliver a talk on drilling heaving shale with a collapsible wire line bit. All papers will be followed by open discussion.

Gulf Coast Leasing Increases

Houston.—Leasing activity is becoming more prominent each week on the Texas Gulf Coast. Since the first of the year there have been 14 major blocks taken by the different major and independent oil companies.

During the past week in Austin County, and to the southwest of the town of Industry, an independent operator has taken a large block. In the area there have been six dry holes drilled.

In Brazoria County, and in the area of Anchor, one of the major oil companies has taken a 3000-acre block and continues to lease more acreage each week. Also at Peach Point, a large block was taken.

In Fort Bend County to the west of Manvel, a large block is being taken which will be added to a large block which the major company already controls.

Near the town of Olive in Hardin County, it is reported that another well will be drilled to the Cockfield. The well will be drilled to the southwest of the old Greer & Frazier's Sternberger 1. The operator now is selling spreads to drill the test.

In Liberty County several major blocks have been leased and also it is reported that one of the major lease holders in the Splendora field of Montgomery County failed to pay rentals on the holdings.

To the southeast of the Cheek prospect, it is reported that a block is being worked up with one of the major oil companies paying as much as $40 per acre.

In the northwestern portion of Montgomery County a drilling contractor has a block of 4500 acres. The leases were taken on a drilling contract and a well will be put down within 90 days after the block is finished. Between the Conroe field and the Humble field another block is being taken. The operators have to date approximately 2000 acres.

Hastings Well Is Waiting on Cement

Houston.—In the Hastings field of Brazoria County, Stanolind Oil & Gas Company's W. J. Miller 1, 2250 feet east of the discovery well, A. C. H. & B. Survey, was waiting on cement to set at 5972 feet after setting seven-inch casing at that depth.

It cored saturated oil sand from 5972 to 5994 feet. From 5824 to 5840 feet the well showed a gas sand and at 5840 feet an oil sand. The gas sand was topped around 5820 feet. On a core from 5994 to 6009 feet the well showed only shale. W. J. Miller 1 is running approximately 100 feet higher than the discovery well on the Marginulina marker. The well should be completed the coming week.

The same operator's S. Paul 1, 2000 feet south of the discovery well is down to 4600 feet and should be in the Discorbis zone this coming week.

The discovery well, J. W. Surface 1, is making around 159 barrels per day through a three sixteenths-inch choke. Tubing pressure is 1800 pounds; casing 2000 pounds. So far the field has been operated solely by Stanolind Oil & Gas Company. Humble Oil & Refining Company, the other principal lease holder in the area, has not made a location.

Leasing activity around the town of Anchor, as reported last week is still in progress. A major oil company has taken approximately 3000 acres in the area. Three other major oil companies have come into the play and the operators are paying from five dollars to $20 per acre for leases.

Anahuac Well Is Being Tested

Houston.—Humble Oil & Refining Company's A. Middleton 1, six miles east of Anahuac, H. & T. C. Survey, Section 58, Chambers County, made a drill stem test on March 8, 1935, from 7026 to 7052 feet and blew dry gas for one hour through a quarter-inch choke on top and bottom. The well is being killed before pulling the tester out of the hole to determine further operations.

At the first of the past week, a production test on the possible discovery well showed five barrels of fluid per hour through a quarter-inch choke. The fluid showed 50 percent oil and 50 percent wash water and mud. The well showed no salt water. Just before killing the well, the wash water and mud had decreased to 15 percent. Tubing pressure registered 2380 pounds; casing 2500 pounds. The well was killed and the hole was reworked to make a drill stem test before deciding further operations. The gas/oil ratio on the production test was estimated at 20,000:1. It is supposed that the well will be carried down to overcome the high-gas pressure.

Southeast of Barbers Hill in Chambers County, and to the west of Cotton Lake, it is reported that a major company has purchased a quarter royalty under 1092 acres, paying $40 per acre base. Royalty under several smaller tracts are reported to have been sold for $60 base. It was reported some time ago that a lease broker was taking this acreage for a major oil company.

Wharton County

Houston.—John Deering's Kountz 1, southeast of Louise, S. A. & M. G. R. R. Survey, took a core from 5581 to 5591 feet at the close of the week which showed nothing of commercial value. The core was supposed to have had a brackish taste but this is questionable. This well became important with the increasing depths. The well topped the Marginulina at 5447 feet and was running considerable higher than other wells drilled in the area. To the north four miles, Boggs & Hammond drilled Kountz 1, which topped the same formation around minus 5389 feet.

Harris County

Houston.—Cockburn & Frazier's Herman Hospital 1, east of Addicks, Wm. Hardin Survey, Harris County, was coring ahead at 7135 feet at the close of the week after topping the Cockfield at 7005 feet. This well is running higher than other wells drilled in the area.

New Oil Sand Extends Batson Pool

Houston.—The Batson field of Hardin County was extended 1000 feet northwest during the past week when John Deering's Cruse 1, was completed for 95 barrels of 39.5 gravity oil per hour through a five eighths-inch choke from 5570 feet. This well also discovered a new producing sand for the field, being 656 feet below the top of the Upper Saline Bayou.

Oil sand was encountered at 5556 feet. On the first hour gauge the well made 95 barrels with a tubing pressure of 615 pounds; no pressure on the casing. On a 12-hour gauge through a five eighths-inch choke the well made 1147 barrels and on the last hour gauge produced 102 barrels of crude oil.

The well is located 1000 feet northwest of Jordan and is on the south flank of the dome. The well is in the W. Donoho Survey, Lot 16, being 1450 feet east thence 150 feet south of the westerly northwest corner of the survey.

The operators are rounding out the south flank of this old dome with several new locations. The field heretofore was operated disinterestedly, but since John Deering completed Hooks 1, in the Upper Saline Bayou, last November, the field has taken on renewed life. Hooks 1, came in making dry gas on a quarter-inch choke and soon started making 75 barrels of high gravity oil per day through a one eighths-inch choke. The well was completed at 4954 feet or 50 feet below the top of the Upper Saline Bayou.

Cruse 1, was completed 656 feet below the top of the Upper Saline Bayou and the new sand is 606 feet below the top of the upper producing sand.

Dickinson Test Waiting on Cement

Houston.—Humble Oil & Refining Company's W. J. Jones 1, 3000 feet northwest of the discovery well in the Dickinson field, J. S. Sherman Survey, Galveston County, was waiting on cement to set at the close of the week with the bottom of the hole at 8037 feet.

The well cored from 7990 to 8005 feet and showed oil, from 8005 to 8010 feet another showing of oil. At 8019 feet the well had a showing of oil in sandy shale. At 8024 feet another showing of oil. Top of the oil sand was found at 7990 feet.

The same operator's Danielson 1, 2500 feet southeast of the discovery well, J. Sellers Survey, was drilling in shale at 8696 feet after taking a drill stem test from 8457 to 8606.

The drill stem test showed 16 thribbles of mud cut with oil and six joints of mud no showing. Pressure was 480 pounds. The test was made through a quarter-inch choke on top and bottom and in 18 minutes. At 8527 feet the operators cored shale with no showing. From 8527 to 8552 the well had an odor of gas in sand and shale. The operators ran an electrical logging device at 8491 feet.

Humble Oil & Refining Company's E. Schafer 1, 3500 feet west of the discovery well, W. K. Wilson Survey, was down to 8216 feet in shale at the close of the week. From 8139 to 8160 feet the well showed salt water. On a drill stem test from 8137 to 8212 feet the well showed 21 thribbles of mud. The test was made in seven minutes through a quarter-inch choke on top and bottom.

To the southwest of Dickinson, it is reported that a Dickinson broker is assembling a block of 5000 acres. The block is reported to be for one of the major oil companies.

Polk County

Houston.—West Production Company's W. T. Carter 1, three and half miles southeast of Livingston, S. Hiroms Survey, Polk County, was abandoned during the past week after testing salt water at 5505 feet.

It is reported Humble Oil & Refining Company will drill a Cockfield test in the area of Goodrich before July, 1935. A tentative location has been made in Section 23, A. Viesca Survey, Abstract 77.

To the southwest of Corrigan it is reported Gulf Production Company is consummating a deal to drill 18 wells on Trinity Lumber Company Fee and Saner Ragby Lumber Company fee. The combined acreage consists of approximately 20,000 acres. The acreage lies in the Houston County School Land Survey and adjoining surveys. The company has done considerable geophysical work in the area.

Harris County

Houston.—T. S. & F. Oil Company's J. B. Hines 1, one and one half miles southwest of Lynchburg and near the San Jacinto battle grounds on the Houston Ship Channel, A. McCormick Survey, Harris County, has attracted attention, and there are numerous conflicting reports on the well.

This "mystery" test at the close of the week set seven-inch casing at 3476 feet. The bottom of the hole is 3491 feet. One report is that it showed oil and gas, while others state that it did not and that the crews pumping oil into the hole to unloosen a stuck drill pipe was the cause of the oil show.

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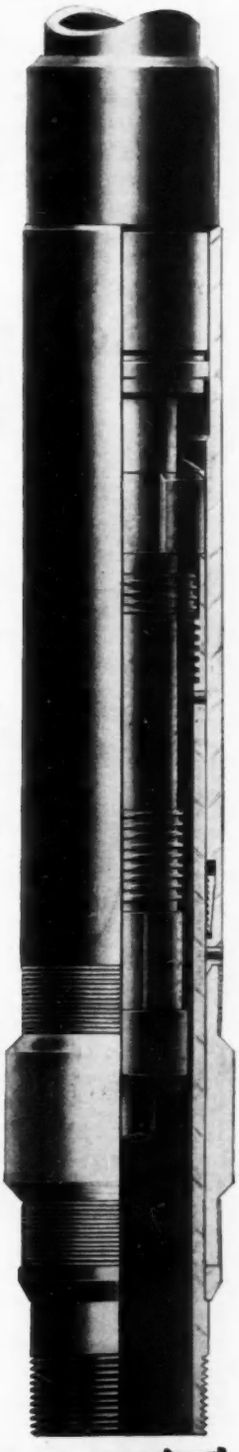

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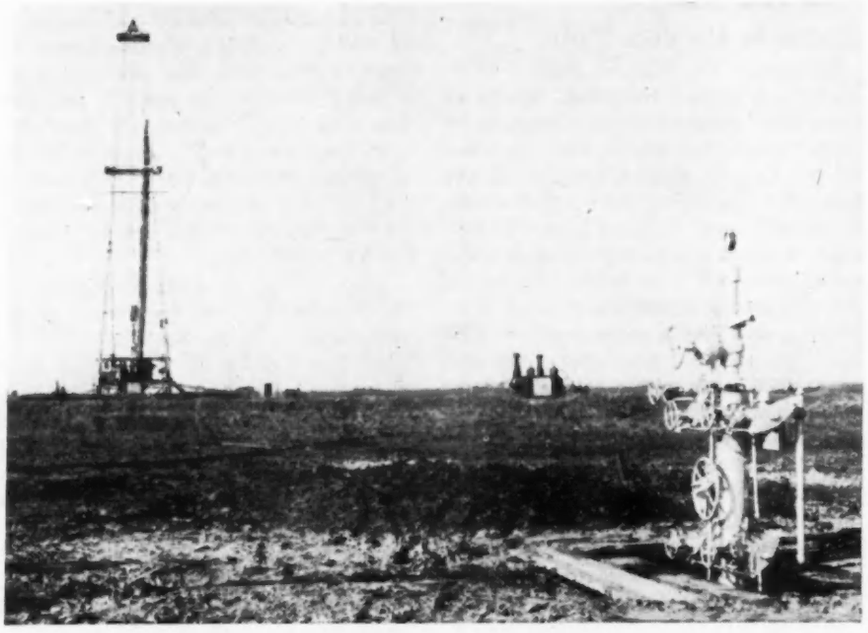
Manvel Field Is Extended 500 Feet

Houston.—The Manvel field of Brazoria County, was extended 500 feet north during the past week when Bowles & Borsodi's Norvell 3, H. & T. C. Survey, Section 23, block 46, was completed for 25 barrels of pipe line oil per hour through a quarter-inch choke.

The sand was topped at 5626 feet and was bottomed at 5653 feet. The operators cored 27 feet of saturated oil sand. After setting casing and drilling plugs the well came in for the above initial production with 700 pounds on the tubing and 750 pounds on the casing. The oil was 27.7 gravity and did not show any water.



Bowels & Borsodi's Norvel 1, discovery well for the Marginulina sand on the north flank of the Manvel field and the same operator's Norvell 3, 500 feet north of the discovery.

The same operator's Norvell 2, was pouring foundation at the close of the week and will spud soon. The well is located center of lot 57, H. &. T. C. Survey, Section 23. It is offsetting Norvell 3 to the southeast.

The Texas Company's C. P. Dawson 1, center of lot 59, H. & T. C. Survey, was shut down waiting on orders at the close of the week after drilling plugs and drilling cement to 5616 feet. The operators set seven-inch casing at 5627 feet where the oil sand was topped. Bottom of the hole is 5645 feet. The well is located two locations southeast of the recent extension test.

The same operator's Gulf Coast Loan Company 1, in lot 37, H. & T. C. Survey, Section 23, was drilling at 5564 feet and should reach the producing sand the coming week. The well is a west offset to the discovery well for the Marginulina sand on the north flank of the field.

The same operator's are rigging up on L. G. Dawson 2, in Block 48, same survey as mentioned above, offsetting the discovery well to the south.

To the west of the Manvel field, and centering in the area of the Iowa Colony, an independent lease broker took 2780 acres for one of the major oil companies. It joins the north flank of the major oil companies' 8320-acre block. The acreage was taken for five dollars per acre cash and two dollars per acre annual rental. The area has been worked with torsion balance instruments. In the same area another major company took 608.9 acres as protection. Paying the same price as the above on its leases.

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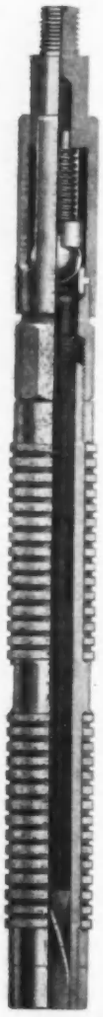

the price of the 2¼" STAFIX Traveling Valve. (Other tubing sizes in proportion).

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Furnished in all sizes, and all connections meet A.P.I. specifications in full.

6 Patents: Nos. 1895728, 1900731, 1919641, 1923040, 1931938, 1931937.
3 Patents Pending.

Literature upon request

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GOOSE CREEK, TEXAS, U.S.A.

Louisiana Representative:
M. C. WOMACK (Phone 89) Thibodeaux, La.

Texas Coast Gets Ten New Oil Wells

Houston. — There were 17 completions reported along the Texas Gulf Coast during the past week and of that amount 10 producers resulted, that yielded 5270 barrels of oil per day. The remaining seven wells were failures.

Gulf Production Company's Kirby C-8, Cleveland field, Liberty County, was finaled from 37 barrels of distillate per day along with an estimated 3,000,000 cubic feet of gas. The bottom of the hole is 5750 feet.

Liberty County

Houston.—Jack Frazier has made location for Lynott Buffon 2, 466 feet west of the east line, 466 feet north of the south line of the southeast 60 acres of 858-acre tract or approximately 1250 feet north of the south line and 1100 feet west of the east line of J. Robeson survey, Liberty County. The well is located in the same area where the operators drilled Lynott Buffon 1 to 7530 feet before it was abandoned in salt water. This well at the time was running over 500 feet higher than other wells drilled in the area.

Fifth Roanoke Well Completed

Lake Charles, La.—The fifth commercial producer was added to the Roanoke field of Jefferson Davis Parish when Humble Oil & Refining Company completed M. Kratzer 2, 2000 feet southwest of the discovery well for 552 barrels of pipe line oil per day.

The hole was carried down to 8671 feet where the oil sand was topped at 8644 feet. Casing was set and cemented and the well came in through a five sixteenths-inch choke.

The same operator's Devilbiss 3, one mile southwest of the discovery well, Section 14-9s-4w, was shut down waiting on orders at the close of the week after testing salt water again at 9216 feet.

Humble Oil & Refining Company has made location for Devilbiss 2-B, 1000 feet west of Devilbiss 1-B, 1000 feet south of Kratzer 1, 2200 feet north and 1566 feet west of the SEc SE 11-9s-4w. At the close of the week a derrick was being erected.

Shell Petroleum Corporation still was fishing on Jarnigan 1, at the end of the week. The fish is stuck at 8511 feet. This well is one of the deepest wells to be drilled on the Gulf Coast, the bottom of the hole being 10,001 feet where it tried to blow out.

Shell Petroleum Corporation has made location for Kratzer 3, 1320 feet east and 440 feet north of the SWc NW 12-8s-4w, or 880 feet due east of Kratzer 2.

Iberville Parish

Lake Charles, La.—In the Atchafalaya swamps of Iberville Parish, Shell Petroleum Corporation is reported to be consummating a deal with Wilbert & Sons for 40,000 acres. Consideration is 50 cents per acre cash bonus and the same amount annual rental.

St. Mary Parish

Lake Charles, La.—In St. Mary Parish, Sun Oil Company is reported to have taken 12,000 acres west of Franklin for geophysical work. The consideration was 30 cents per acre with $2.50 upon selection.

E. D. COLE, warehouse clerk for Humble Oil & Refining Company in the London, Texas, district, now is located at Roanoke, Louisiana, as assistant district chief clerk and warehouseman.

Ascension Parish

Lake Charles, La.—Turnbull & Irwin is reported to have taken over Sorrento Dome in Ascension Parish, from Gulf Refining Company. Gulf Refining Company is to retain a one twenty fifth working interest in the field. All cost is to be taken out of production. It is also reported that Turnbull & Irwin are dealing with Gulf Refining Company and Humble Oil & Refining Company for Lake Hermitage in Plaquemines Parish.

Cameron Parish

Lake Charles, La.—Pure Oil Company is reported to have taken a 10-year paid-up lease on 10,000 acres on the eastern edge of Mallard Bay in Cameron Parish. The consideration for the paid up leases was $20,000. Pure Oil Company also is reported to be leasing to the east of this block.

Vermillion Parish

Lake Charles, La.—It is reported Stanolind Oil & Gas Company has taken 10,800 acres south of Gueydan in Vermillion Parish for geophysical work. The selection is two dollars per acre with the same amount annual rental.

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARRIOLA—		
Republic Prod. Co., Arriola 10 (wo)	175	4520
BARBERS HILL—		
Texas Gulf Prod. Co., Fitzgerald 3	364	4116
BATSON—		
John Deering, Cruse 1	2280	5570
CLEVELAND—		
Gulf Production Co., Kirby C-8	37	5750
CONROE—		
Gulf Coast Drilling & Prod. Co., Keystone Mills 29	40	5060
Humble O&R Co., So. Tex. Dev. Co. A-73	*	5157
Malto Oil Co., Texas Osage 4	1200	5148
DAMON MOUND—		
Gulf Stream Oil Co., Cave Heirs 1	*	1744
FANNETT—		
Gulf Prod. Co., Junker 4 (wo)	200	3845
HULL—		
W. W. Fonden, Hooks 1	8	2104
MANVEL—		
Bowles & Borsodie, Norvell 3	600	5653
The Texas Co., Belcher 10-A	*	6212
PIERCE JUNCTION—		
Rio Bravo Oil Co., Settegast A-9, (wo)	*	5411
TOMBALL—		
Humble O&R Co., C. W. H. Martin 3	*	5633
R. Weindorff A-2	366	5575
HOUSTON COUNTY—		
Sterling O&R Co., W. T. Bruton 1, 3850 ft fr n line and 9350 ft fr e line of 1034-ac tr in B. Clark sur	*	3500
POLK COUNTY—		
West Prod. Co., W. T. Carter 1, S. Hiroms sur	*	5505

*Failures; †Junked; ¶Million cu. ft. gas.

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Lake Charles—Converse—Many
Monroe—Houma—Kilgore
Willow Springs

Bosco Producer Found Outside Superior Block

Lake Charles, La.—Oswege Oil Company's Mouton 1, 210 feet south and 1498 feet east of the NWc SW 34-8s-3e, Bosco field, Acadia Parish was completed during the past week for 24 barrels per hour from the second Marginulina sand. Completion of this well adds the second operator to enter the Bosco field, which was heretofore operated solely by Superior Oil Producing Company.

The bottom of the hole is 8607 feet and the oil sand was encountered at 8582 feet. Seven-inch casing was set and cemented at 8577 feet. The well came in for the above initial production through a five sixteenths-inch choke with a tubing pressure of 1350 pounds; casing 490 pounds. This well crossed a fault around 8395 feet and was running 90 feet lower than the other wells in the area. The well is located approximately 1500 feet east of Superior Oil Producing Company's O. Melancon 1. Oswege Oil Company controls about 40 acres in the area. The Superior Oil Producing Company has been operating in the field, one well to 20 acres. It is not known if this plan will be changed since the new operator in the field has only 40 acres.

Superior Oil Producing Company completed C. B. Hernandez 1, Section 34-8s-3e, last week for 38 barrels in three hours on the first gauge. This well is also producing from the second Marginulina sand in the field. The oil flow was through a nine sixty-fourths-inch choke with a tubing pressure of 1500 pounds, casing 1559 pounds.

Louisiana Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BOSCO—		
Oswego Oil Co., Mouton 1	576	8607
Superior Oil Producing Co., C. B. Hernandez 1	288	8659
EAST HACKBERRY—		
Calcasieu Oil Co., Watkins 38 (wo)	40	2975
GILLIS—		
Union Sulphur Co., State 2	404	6711
IOWA—		
Shell Pet. Corp., Johnson 3	903	4441
JENNINGS—		
Port City Oil Co., Syndicate Fee 3 (wo)	8	1611

*Failures; †Junked; ¶Million cu. ft. gas.

Lake Charles, La.—There was not a single failure reported in the Louisiana Gulf Coast during the past week. There were six producing wells with an initial production of 2219 barrels per day.

Frank Champion on Eastern Trip for Byron Jackson

Planning on a trip of about two months duration in the Mid-Continent and New York, Frank Champion, general sales manager for the Oil Tool Division of Byron Jackson Company, left California the end of February.

Mr. Champion can be reached in the Mid-Continent through the company's sales office at 2505 Boaz Street, Fort Worth, Texas, and in New York at 525 Graybar Building.

Will Rebate Four Cents Of Louisiana Tax

Baton Rouge, La.—A special session of the Louisiana legislature that adjourned March 2 passed a resolution empowering the Governor of Louisiana to adjust the five cents per barrel refinery tax as the governor "deemed expedient."

Pursuant to that resolution Governor O. K. Allen announced that he would rebate four cents of the five cents tax. The tax had been levied at a previous special session last December and was to have gone into effect January 9 this year. Later the state administration announced that for 90 days after January 9 four cents of the five cents tax would be rebated provided refineries took four fifths of their crude from Louisiana oil.

It had been hoped that the tax would be lifted at the special session adjourning March 2 but this was not done, the rebate resulting instead.

The present arrangement is far from satisfactory as the rebate can be cancelled at any time within a 30-day period by the governor, and refiners are therefore unable to estimate their costs of production.

Bellevue Producing Properties Purchased

Shreveport, Louisiana.—Premier Investment Company of Fort Worth, Texas, which has taken a leading part in the rejuvenation of the shallow Bellevue field, Bossier Parish, is adding to its holdings in that field. This company has taken from Bellevue Oil Corporation 240 acres in Section 14-19-11 and all oil well equipment on four wells in NW NE 14-19-11 for a consideration of $2000 cash. Bellevue Oil Corporation had acquired the leases and equipment from Continental Securities Corporation et al.

Abney D. Scanland and associates have assigned to Premier Investment Company the rights to run all oil produced from a lease in S½ NE 15-19-11 to a processing and treating plant in Section 14-19-11 and to treat this oil and deliver it to any pipe line company or purchasers.

L. M. Moffitt of Shreveport, who has a 7000-acre block in township 23 north, ranges 12 and 13 west, Bossier Parish, has added about 3000 acres in that township and range to the original block.

An agreement has been made between Stanolind Oil & Gas Company to buy from J. M. Byrd and associates the oil being produced on Gold Point Plantation in Sections 11 and 14-19n-14w.

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Increase Allowable of South Louisiana Fields

Shreveport, Louisiana.—All of Louisiana's increase in allowable for March was allocated to south Louisiana fields in the proration order for the month issued March 1 by Dr. J. A. Shaw, director of the minerals division, Louisiana Conservation Commission. Louisiana's March allowable is 115,100 barrels as compared to 114,000 barrels for February. South Louisiana for March was allocated 94,100 barrels as compared to 93,000 barrels in February. North Louisiana's allocation for March is 21,000 barrels, unchanged from February. As heretofore no "break-down" of allocations was made for individual fields in North Louisiana.

The March allocations for south Louisiana fields for March, and their increase or decrease from February allowables follow:

Bayou Choctaw, 450 barrels, unchanged; Black Bayou, 1400 barrels, up 450 barrels; Bosco, 14,750 barrels, up 500 barrels; Caillou Island, 6850 barrels, unchanged; Cameron Meadows, 1350 barrels, unchanged, East Hackberry, 5150 barrels, down 200 barrels; Evangeline, 1150 barrels, unchanged; Four Isle, 750 barrels, unchanged; Gillis, 1950 barrels, up 900 barrels; Gueydan, 300 barrels, unchanged; Iowa, 18,750 barrels, unchanged; Lake Barre, 6850 barrels, unchanged; Lake Washington, 1000 barrels, down 450 barrels; Leeville, 17,250 barrels, down 750 barrels; Lockport, 1600 barrels, unchanged; New Iberia, 200 barrels, down 100 barrels; Port Barre, 4350 barrels, up 200 barrels; Roanoke, 2300 barrels, up 500 barrels; Starks, 600 barrels, unchanged; Sulphur Mines, 2150 barrels, down 150 barrels; Sweet Lake, 1000 barrels, down 50 barrels; Vinton, 2900 barrels, up 150 barrels; and White Castle, 500 barrels, down 450 barrels.

Four New Starts in North Louisiana Area

Shreveport, Louisiana.—Four new locations were announced last week in North Louisiana and transfer of another wildcat block with plans for an early test also was announced.

Two new locations were made in the northeast offshoot of the old Pine Island field, Caddo Parish, which was opened several months ago. Press and Lambert are rigging Robertson 1, 300 feet north and east SWc 15-20n-15w and Texas Company made location for Fee 4, NEc NW NE 16-20n-15w.

In the Urania district, La Salle Parish, Monroe Production Company has spudded Winberry 1, NE SE NW 18-10n-2e, cemented six-inch casing and is drilling plug at 1507 feet. This field produces from the Claiborne-Wilcox contact around 1520 feet.

Laurel Petroleum Company of Laurel, Mississippi, who recently assembled a 5000-acre block several miles southwest of Converse and north of the old Blue Lake field (West Zwolle), Sabine Parish, for a series of Annona chalk rock wells, last week started rigging the first test, Long-Bell Lumber Company 1, located 330 feet north and west SWc 14-8n-14w.

C. J. Hodges of Albany, Texas, and E. B. Bird, mining engineer and geologist of Beverly Hills, California, have taken 4700 acres of a 6000-acre block recently assembled by A. V. Lynch of Little Rock, Arkansas, centering in Section 20-14n-16w, DeSoto Parish, and will drill a test to the Woodbine, probably in that section.

H. B. Schumacher, trustee, has abandoned plans for deepening Curry 1, NW NW 39-11n-12e, an old test in Tensas Parish, completed several years ago at 3750 feet, and on which rigging up for deepening was recently started.

Shreveport, La.—An eight-car loading rack was recently completed on the Louisiana, Arkansas and Texas railroad at Lorraine, Louisiana, on the Texas line. The loading rack is said to be used by three small East Texas refineries.

Bill Abele Joins Link-Belt Company

W. H. "Bill" Abele, formerly with Oil Well Supply Company, now is with Link-Belt Company. He is making Oklahoma City his headquarters and is handling the company's chains and vibrating screens in Oklahoma and Kansas.

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Five New Oil Wells For North Louisiana

Shreveport, Louisiana.—Five oil wells, four in the Pine Island field of Caddo Parish, and one in the southern part of the Converse field, Sabine Parish, were completed last week in North Louisiana. The four Caddo wells were all pumpers and the Converse well is flowing 20 barrels of oil daily.

Two small gassers were among the completions and there were three dry holes, all wildcats. One of the gassers was in the lower Cretaceous horizon of the old Naborton field, DeSoto Parish, being the second gasser completed in that field in the lower Cretaceous. It is a 900-foot offset to the first gasser in that horizon that made gas for a few weeks and then sanded up. The present well has 1400 pounds rock pressure and was completed in four feet of sand with hole bottomed at 3620 feet.

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BOSSIER PARISH (Benton)—		
Clyde French, G. Hall 1, sw ne 28-20n-13w	*	1200
Howard & Bird, Sam Gold 1, nw ne 36-20n-13w	*	1126
CADDO PARISH (Pine Island)—		
Gulf, W. D. Chew 7, sw ne 33-21n-16w	20	1835
Ark-La-Tex O&G Co., Simon 2, sw nw 15-20n-15w	115	2207
Shreveport Oil Corp., Muslow B-4, se sw 4-20n-15w	40	2160
Tooke & Reynolds, Levy 1. se ne 16-20n-15w	35	2212
CATAHOULA PARISH—		
T. R. Hincey, La. Central Lbr. Co. & Tensa Delta 1, sw ne 32-9n-6e	*	1541
DE SOTO PARISH (Naborton)—		
Bailey Gaunce, B. F. Jenkins 2, se sw sw 35-13n-12w	¶5	3620
SABINE PARISH (Converse)—		
Lawson, Leavell & Bryant, Bank of Pleasant Hill 3, nw nw ne 29-9n-13w	20	1607
UNION PARISH (Monroe)—		
Carbons Consol., Fee 8, nw sw 35-22n-3e	¶1½	2170

*Failures; †Junked; ¶Million cu. ft. gas.

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- A. P. I. Oil Country Gauges and Thread Comparators

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HOUSTON, TEXAS

Eleven Louisiana Drilling Permits

Shreveport, La.—Eleven drilling permits were issued last week by the minerals division, Louisiana Conservation Commission. Nine of the new tests were for south Louisiana parishes as follows: Calcasieu, five; Iberia, two; and Plaquemines, two. The north Louisiana permits were divided between La Salle and Union Parishes, with one each.

Converse North Extension Well Looks Promising

Shreveport, Louisiana. — Indications of a producer aproximately midway between the Converse shallow field proper, and a two miles north extension that has yielded two small wells, appeared assured last week when Whitehurst and associates' Logan Oil Company 1, Section 3-9n-13w, Sabine Parish, stood with 1500 feet of oil in the hole when swabbing was begun. Hole was bottomed at 1956 feet near base of Annona chalk. Six-inch casing had been cemented at 1460 feet, top of the Nacatosh.

Lawson, Leavell and Bryant are arranging to drill ahead in Whitney Corporation 1, Section 5-9n-13w, a mile outside of Converse production, after running formation tester at 3100 feet, after a show of gas, and testing an estimated 1½ million cubic feet and a show of salt water. This test is designed for the lower Cretaceous. The 3100-foot level is around contact of upper and lower Cretaceous.

Jackson Mississippi Gas Field Is Five Years Old

Jackson, Miss. — The Jackson gas field was five years old on February 16. Total gas produced from the field which is approximately 7500 acres in extent is 34,837,858,000 cubic feet, according to figures of the Mississippi State Oil and Gas Board.

There have been 178 wells drilled in the Jackson field of which 132 were producers of gas and 108 are now connected to lines with six producers not having connections. Thirty-six wells drilled to the 2400-foot Selma chalk where the gas is found were non-productive and ten tests were abandoned before reaching this horizon. Eleven wells that were gas producers and had connections have gone dead from encroachment of salt water. All these were edge wells. Five others that made some oil or gas and water and were not connected have gone dead.

Total gas production for the Jackson field by years follows: In 1930, a total of 586,634,000 cubic feet; in 1931, a total of 6,164,370,000 cubic feet; in 1932, a total of 9,674,653,000 cubic feet; in 1933, a total of 9,405,972,000 cubic feet; and in 1934, a total of 9,006,229,000 cubic feet.

During 1934 United Gas Public Service Company pulled 7,443,289,000 cubic feet and Mississippi Power and Light Company, 1,532,940,000 cubic feet, with an estimated 30,000,000 feet was used in drilling, etc., and was not metered. The largest amount pulled in any month was in December, 1934, when 1,094,847,000 cubic feet were used.

The rock pressure is the Jackson field is 958 pounds which is only slightly less than the average for the first year which was around 970 pounds.

Two wells in Jackson are classed as oil wells. Both produce a heavy oil of about 13.2 gravity. Both are in Section 13-5n-1e. The two produced an approximate total of 1700 barrels in 1934 of which 1500 barrels was from Henslee and Tanner's Warner 1 and the other 200 barrels came from Matson et al's Warner 1. Approximately 1000 barrels went into lubricating gas oil and some was used for oiling streets, etc., with some still in the pits.

The total gas withdrawal from the four small gassers in the Amory field, Monroe County, the first gas in the state, this field being discovered in 1925, for the year 1934 was 163,901,000 cubic feet. The pressure has dropped very low in this field and three towns being supplied with this gas had to tie into the Monroe, Louisiana-Birmingham trunk line to supplement their fuel supply.

Union County Wildcat Shows Gas

El Dorado, Ark.—After testing an estimated 10,000,000 cubic feet of gas at 2560 feet in a drill stem test, Joe Modisett and associates started arrangements to set casing in Ward 1, SE NW 6-18-13, a wildcat in Union County, three miles west of the Urbana field that produces from the Travis Peak formation of the Trinity series at the 3500-3600-foot level.

Miller County Block Is Taken

Shreveport, La.—C. J. Hodges, Trustee, of Albany, Texas, has taken over a 3000-acre block in Miller County, southwest Arkansas, and the derrick for Commercial National Bank 1, SWc NE SE 30-17-28, for a test to be drilled to 3600 or 3700 feet for a Woodbine test of possible shoreline production on the north side of the Sabine Uplift. This block was originally assembled by Beverly Oil Company after a test in Section 5-18-28, Miller County, last summer reported an oil show at 3555 feet in what was identified as Woodbine. This test was lost due to collapsed casing and two subsequent tests nearby failed to get production. Hodges plans to start rigging immediately.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
UNION COUNTY—		
George L. Pace, Union Sawmill Co. 1, ne ne sw 24-18-12	*	3614

*Failures; †Junked; ¶Million cu. ft. gas.

Woodley Petroleum Moving to Houston

Shreveport, La.—Effective March 15, headquarters of Woodley Petroleum Company, among the largest independent companies in North Louisiana, will be moved from Shreveport to Houston, Texas. Announcement to this effect was made last week by J. R. Pope, secretary of the company. Major J. R. Parten, president of the company, has been living at Houston for several months. The office staff to be moved to Houston numbers about six.

Morton T. Higgs Heads Sperry-Sun Tulsa Office

The Sperry-Sun Well Surveying Company has opened an operating branch office at Tulsa, Oklahoma, with Morton T. Higgs in charge of the office.

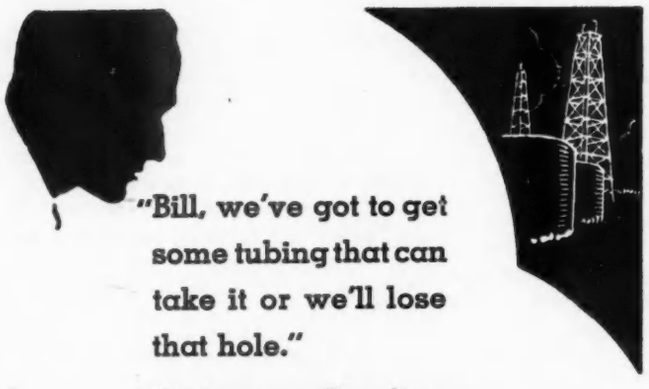
Columbia County Block to Be Tested

El Dorado, Arkansas.—Dan Brooks of El Dorado, has turned 2000 acres checkerboarded in a 4200-acre block he recently assembled in Columbia County, Arkansas, and extending into Webster Parish, Louisiana, known as the Dunn's Bridge block and centering in Section 10-20s-22w, Columbia County, to Cary and Travis of Kilgore, Texas, for a 3500-foot test to start by March 15. The location will be in either Section 9 or 10-20s-22w.

This structure originally was mapped on the base of the Annona chalk and showed a closure of approximately 150 feet. The structure as mapped is approximately as high as the Haynesville, Louisiana, field that produces from the Blossom (Ozan) around 2800 feet, and is believed to be in the northwest "trend" from Haynesville. As mapped it covers about the same area as Haynesville.

Brooks also is reported to have sold 500 acres of his remaining 2200 acres in this block to Magnolia Petroleum Company, for a consideration of $15 per acre.

Arkansas had no new locations or drilling permits last week.



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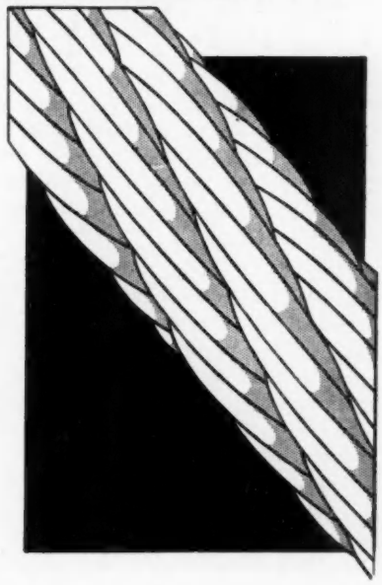

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Distributors in Texas, Louisiana and Arkansas

Cooper and North Jail Fields Are More Closely Linked

Hobbs, New Mexico.—Linking of the Cooper and North Jal fields, Lea County, advanced a step closer last week when Phillips Petroleum Company and Pure Oil Company's Wool 1, C NE NE 3-25s-36e, extended the former area about three quarters of a mile to the southwest with flowing production. An unexplored interval of about 1¾ miles separates the two areas, which produce from about the same sub sea depth in the lime and the oil is identical in quality. Both are of the reef type of structure, with oil production extending over an average width of one mile. When the gap between the two fields is closed they will have a combined length in a north and south direction of about eight miles, although the north portion of the Cooper field is wide open for important extensions.

Completion gauge given Wool 1, the outpost producer for the Cooper field, was somewhat of a disappointment when the well averaged 30 barrels of pipe line oil per hour through open 2½-inch tubing landed at 3478 feet, with gas yield estimated at 400,000 cubic feet daily. The well previously had flowed at rate of 150 barrels of oil per hour and 2,000,000 cubic feet of gas daily, based on 45-minute drill stem test, from lime at 3480-3497 feet. The main oil zone was logged at 3486-93 feet, with the hole bottomed at 3497 feet, or 235 feet below sea level. Failure of the well to equal its preliminary showing may be attributed to heavy drilling fluid used while cementing seven-inch pipe at 3478 feet after the formation tester was used. This well registered a low structural position in logging top of brown lime at 3214 feet, or 48 feet above sea level, but scored oil production at a normal depth.

The Phillips-Pure interests completed their 12 consecutive oil producer on the C. D. Woolworth leasehold, situated in the mid-section of the Cooper field, when Woolworth 12-A, C NE SW 26-24s-36e, gauged 64½ barrels per hour for four hours flowing through open 2½-inch tubing from lime at 3490 feet, or 173 feet below sea level. The gas volume accompanying the oil was rated at 670,000 cubic feet daily. Operations are underway on Woolworth 13 and 14, new locations reported last week, and location has been made for Woolworth 15, C SE NE 27-24s-36e.

The Texas Company's I. B. Ogg 5-A, C NW SE 35-24s-36e, southeast edge producer for the Cooper area, gauged 60 barrels per hour, flowing by heads, from lime at 3455 feet, or 188 feet below sea level. Continental Oil Company and The California Company's D. L. Vaughn 1-A-15, C SE SE 15-24s-36e, located on north line of the oil area, failed to register a gain in oil production when deepened from 3520 to 3533 feet, and late last week was coring at 3539 feet, or 185 feet below sea level. This well was reported last week making five barrels of oil per hour and 4,190,0000 cubic feet of gas daily from lime pay at 3500-3520 feet. The gas flow increased to 6,120,000 cubic feet daily when tested at 3533 feet. The partnership's two wells to the east were completed for average producers.

The Eunice field added only one producer last week. Gypsy Oil Company's State-Bell-Ramsey 3, C SW SW 9-21s-36e, gauged 1224 barrels of oil and 1,500,000 cubic feet of gas daily, flowing through open tubing from lime at 3885-3906 feet. Continental Oil Company and The California Company's M. Lockhart 1-A-30, C SE NE 30-21s-36e, is experimenting with a gas lift flowing device after failing to develop a steady flow following treatment of the lime horizon with a total of 5500 gallons of acid solution. The hole was treated on three separate occasions, and is bottomed at 3957 feet, or 318 feet below sea level. Bottom-hole water, ranging from six to 12 percent, is reported to be showing with the oil production.

Monument Field

Trace of sulphur water without any appreciable gain in oil and gas production was experienced by Amerada Petroleum Corporation's State 1-D, C NW NW 1-20s-36e, discovery well of the Monument structure, Lea County, in deepening from 3929 to 3954 feet, or 364 feet below sea level. The hole has since been plugged back to 3929 feet, or minus 339 feet, where it was originally completed flowing 900 barrels of 32½ gravity oil daily on gas lift. Soft porous lime was logged at 3941-3954 feet. Officials of the company were satisfied that the top section of the water table had been penetrated at the latter depth, and ordered the hole pluggd back after the well swabbed and flowed 695 barrels of oil, with less than two percent emulsion, on 24-hour gauge ending 1 p. m. March 5.

Spring Work Is Getting Under Way in Wyoming

Lovell, Wyo.—One oil well was brought in, one test started, and several old wells resumed drilling in the black oil fields of Northern Wyoming this week, as operators are starting the spring activity.

Ohio Oil Cmpany's Hoskins 1, SW SW SW 14-36n-97w, in the Byron field, swabbed 500 barrels initial and is rigging up for pumping test. Hole bottoms at 5214 feet in the Tensleep formation, which was topped at 5130 feet. The 8⅝-inch production casing is cemented at 5080 feet on top of the Embar.

Taylor Oil Company is resuming operations in Hoskins 1, Lot 59, SE SE SE 25-56n-97w, which has been shut down at 5275 feet, just above its objective, and has several hundred feet of drill pipe frozen in hole.

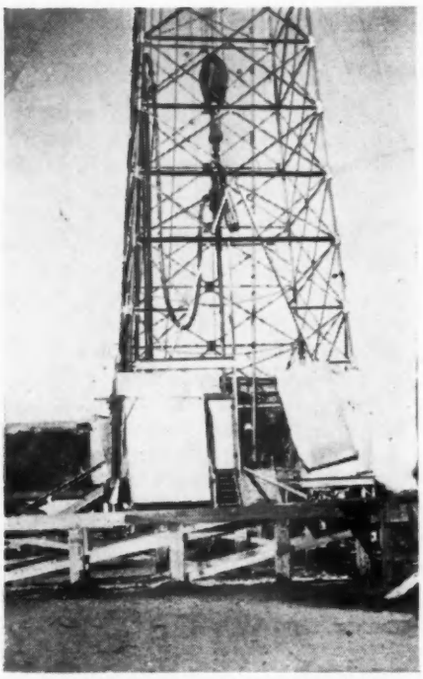
Continental Oil Company is moving in rotary for Northern Pacific 2, NW SE SE 23-58n-98w, in the Frannie Dome field, Park County.

Crosby & Huntington Syndicate's Denio Mining & Milling Company 1, Tract 43, Section 15-55n-97w, in the Byron field, has resumed operations, and is cementing the 12½-inch casing at 3000 feet.

In the Garland Dome oil field, adjoining Byron, Garland Oil Company's Government 2-S, CSL NE NW 14-56n-98w, Park County, is drilling at 1982 feet.

Rocky Mountain Gas Company is drilling below 800 feet in its Oregon Basin Oil & Gas Company 1, SW NW 35-51n-100w, in the Oregon Basin oil field, Park County. The test is for gas for the company's system at Cody, Wyoming.

Craig, Colo.—Stanolind Oil & Gas Company's Parkinson 35, SE SE NE 22-4n-92w, in the Iles Dome field, Moffat County, Northwestern Colorado, is coring its objective, the Sundance sand, at 3340 feet. Company has announced location for Parkinson 28-X, NE SW SW 22-4n-92w, which will start drilling on the completion of Parkinson 35.



Amerada Petroleum Corporation's State 1-D, discovery producer on the Monument structure, Lea County, New Mexico, showing the derrick elevated and boxed in for protection against shifting sands.

Although this Monument area producer failed to develop big production in drilling through the oil horizon, which is made up of a series of thin streaks of saturated lime zones, endled. Other interests holding lease protection are to start exploration work shortly, while the discovery company is reported to be planning to start its second test on a federal permit due south of the producer and probably in Section 12. The producer is credited with having an aggregate of about 50 feet of oil producing formation, with the best yield below the 3900-foot level. A prolific but undertermined volume of high pressure gas was partly cased off in cementing seven-inch pipe at 3760 feet, while the remainder is available for fuel, or for gas lift operations by means of a bradenhead.

Plugging orders have been issued for The Texas Company's Anna C. Moore 1, C NW SE 21-20s-32e, a wildcat on the west edge of Lea County, after testing sulphur water in lime at 3019 feet, with an elevation of 3509 feet. Two other wildcats being drilled in this township by Argo Royalty Company and Ryan Consolidated Petroleum Corporation are likewise nearing a decisive level. Both are on federal permits.

Prorated wells in Lea County outside the Maljamar field, which is incorporated in the Artesia district's quota, and the Hobbs field, were given a top allowable of 152 barrels daily, according to proration schedules posted by Umpire C. G. Staley for the March 1-16 period. This is a one-barrel increase. The allowable for the Hobbs field was boosted from 31,218 to 32,404 barrels also on March 1, or a fraction less than one barrel gain for each of its 221 producers. These increases were made possible by re-distribution of the state's federal quota of 49,300 barrels daily so that marginal wells would not be given an allocation beyond their ability to produce.

Montana Tax Bills

Helena, Mont.—Three bills, adding to the burdens of the oil industry in this state, were passed by the Montana lower house this week and are now in hands of state senate committees. House Bill 319, which amends the statutes on utilities and defines oil companies as a utility, passed the house. House Bill 443, imposing a 2½ cent tax per barrel on imported oil which has not been subjected to the Montana production license tax, passed the house by a vote of 59 to 33. This bill was advocated by Northern Montana producers as a protection against Wyoming crudes which enjoy a three-cent differential because of the Montana production tax. House Bill 419, the third passed, increases the tax on natural gas from 5/8 of 1 cent to 2 cents a 1000 cubic feet.

Mountain States Completions

NEW MEXICO

Company, Well and Location	Init. Prod. Bbls.	Depth
GUADALUPE COUNTY—		
New Mexico Exploration Co., Chico 1, ne nw 20-9n-17e	*	2840
LEA COUNTY (Cooper Field)—		
Phillips Pet. Co.-Pure Oil Co., Woolworth 12-A, c ne sw 26-24s-36e	¶1-2000	3490
Wool 1, c ne ne 3-25s-36e	¶½-750	3497
Texas Co., I. B. Ogg 5-A, c nw se 35-24s-36e	1500	3455
LEA COUNTY (Eunice Field)—		
Gypsy Oil Co., State-Bell Ramsey 3, c sw sw 9-21s-36e	¶1½-1225	3906
LEA COUNTY (North Jal Field)—		
Continental-California Co., M. F. Sholes 2-A-13, nwc nw se 13-21s-36e	500	3325
LEA COUNTY (Wildcat)—		
Texas Co., Ann C. Moore 1, c nw se 21-20s-32e	*	3019
McKINLEY COUNTY—		
Royer Oil Co., Santa Fe R. R. Lands 1, nw sw 13-15n-10w	*	1027
SAN JUAN COUNTY—		
C. E. Barnhart, Abreo 1, sw sw 27-30-11w	*	lcn.
MONTANA		
GLACIER COUNTY (Cut Bank Field)—		
Marshall et al, Wilkins 1, se ne 12-33n-6w	62	2995
WYOMING		
BIG HORN COUNTY—		
Ohio Oil Co., Hoskins 1, sw sw sw 14-56n-97w	500	5214

*Failures; †Junked; ¶Million cu. ft. gas.

Syndicate Plans Test in Northwest Colorado

Craig, Colo.—A group of independent operators are forming a syndicate for the drilling of a wildcat test to the Sundance formation on the Beaver Creek structure, near here, in Northwestern Colorado. The test is due to attract considerable attention as the structure is located 10 miles east of the Iles Dome field, where the Sundance sand yields Colorado's only flush production.

Entering into the syndicate are S. Marvin James, Rocky Mountain wildcatter, and A. L. Latker, formerly with Danciger Oil & Refining Company, both of Denver; Osea Nelson, the contractor, and T. L. Johnson, president of Laramie Stockyards, Inc., both of Laramie, Wyoming; Luther Freeman, formerly with the Sinclair Oil Company; Jack Morton, president of Morton Livestock Company, and William Delahoyde, owner of the LaBonte Hotel, all of Douglas, Wyoming.

Midwest Refining Company, The Texas Company, and Transcontinental Oil Company drilled a joint test on the Beaver Creek structure in 1925, and abandoned at 3695 feet, getting water in the Dakota and Lakota sands. Later Midwest Refining Company tested the Iles Dome structure, developed water in the Dakota and Lakota, but encountered commercial production in two sands in the Morrison formation on deepening. Eighteen months ago The Texas Company drilled a deep test to the Sundance at Iles and brought in a 5000-barrel well.

Harry Aurand, Denver geologist, and Latker, recently rechecked the structure, and report that the Sundance formation should be reached at around 3800 feet. Beside the syndicate, The Texas Company and Stanolind Oil & Gas Company hold acreage on the structure.

Osage, Wyo.—Two tests are under way in the Osage field, Weston County, Irene Eaton's Fee 14, NE SW 30-46n-63w, is deepening after drilling the Newcastle sand between 1393-97 feet. The hole filled 80 feet, and will be shot. Albert Jones' Bock 9, CSW NE 21-46n-63w, is spudding.

North Montana Work Waits Canadian Demand

Cut Bank, Mont.—One well, a townsite location, was completed in the Cut Bank field this week. Marshall et al's Wilkins 1, SE NE 12-33n-6w, pumped 62 barrels initial. The well is at 2995 feet in the Ellis with the producing sand cut between 2955-75 feet. It exceeded production estimates, as the hole filled only 700 feet before pumping.

Two townsite wells were near completions. Wickstrand & Walgren's Simero 1, Lot 5, Section 12-33n-6w, is running rods and tubing to pump. The well has 400 feet of oil in the hole, which bottoms at 3020 feet. The Cut Bank sand was logged at 2962-92 feet.

Fist et al's Danen 1, Lot 10, Section 12-33n-6w, is drilling out plug with 6⅝-inch production string set at 2930 feet. Six other tests are under way in the Cut Bank field, and little new activity is expected in the Glacier County field until an increase in Canadian refinery runs boosts the demand for Northern Montana crude.

Lance Creek

Lusk, Wyo.—Continental Oil Company has a near completion in Apex-3, SW NE SW 34-36n-65w, an old well deepened to the Sundance in the Lance Creek field, Niobrara County, Eastern Wyoming. The well is swabbing to test and topped the Sundance at 3507 feet. Hole bottom at 3510 feet and the well will deepen. Ohio Oil Company's Agnes Rohlf 2, NE SE 32-36n-65w, is drilling near its objective, the Sundance, at 3564 feet.

Plugging Utah Test Back to Gas Sands

Salt Lake City, Utah.—Ramsey Petroleum Corporation will discontinue drilling on Weightman 1, NE SW 18-26s-7e, Last Chance Creek anticline, Emery County, Utah.

The bottom of the hole is 3168 feet, which is estimated to be 700 feet from the top of the Pennsylvanian, the objective. The small size of the hole forces discontinuance of drilling. The last casing set was 5¾-inch pipe at 3000 feet. A string of eight-inch casing was lost at 1986 feet, causing the hole to be reduced.

The well will be plugged back to one of the gas sands found at 2775 feet. The well produced 4,000,000 cubic feet of wet gas at 2695 feet and 21,000,000 cubic feet at 2773 feet. Additional gas found slightly deeper nearly cleared the hole of mud. The well also had oil shows at 2800 feet and 3071 feet.

The company plans to drill another well within a short time in the vicinity to make a complete test of the structure.

35 Year Old Tanker Taking Last Voyage

Los Angeles.—Union Oil Company's tanker Oleum, built in 1900, is to make just one more voyage to Japan, and will be scrapped. The vessel has been sold to Japanese interests. When the vessel was first launched, it was called the Thomas, and was a hopper type dredge, used at New York. It was purchased by Union Oil Company in 1911 and converted into a 32,000-barrel tank steamer for use on the Pacific Coast.

It has a length of only 300 feet, has a very shallow draft, and has operated up and down the coast for nearly 25 years. It will not be replaced at this time.

Kern County Draws Half of New Wells

Los Angeles.—Of the 18 notices of new wells to be drilled in California filed the week ending February 23, nine were for Kettleman Hills and fields in Kern County. Shell Oil Company is starting four new holes in the Mount Poso field and Kettleman North Dome Association is starting two at Kettleman Hills. One new well is starting at Belridge and there are two new ones at Mountain View.

Two new holes are starting at Long Beach and the same number for Inglewood. Seal Beach, Coyote Hills, Bardsdale and Santa Barbara Mesa drew one each.

BEN TAYLOR, Peden Iron and Steel Company of Houston, Texas, was a Tulsa business visitor during the week.

Hole Bottoming Under Another Lease Restrained

Los Angeles.—Superior Court Judge Percy Hight at Long Beach, California, has rendered a decision holding that a well that is drilled to bottom under another company's lease is clearly a case of trespassing and can be properly enjoined from producing said well and also can be recovered against for all oil removed. This was a case where Union Oil Company of California entered a suit against Reconstruction Oil Company, over a well drilled near the Union Oil Company's Long Beach Community lease, charging that said well was diverted to bottom under Union's property. The decision was that Union can recover for the oil recovered, the defendant company was ordered to plug the well at the point where it crossed the lease line and proper restraining orders were issued.

Survey in Court

The case was of unusual importance due to the holding that evidence to prove the deviation of a hole secured by present surveying methods is legal and good in court, where the testimony is offered by competent authorities. There has been considerable so-called crooked hole drilling in California in various fields, many of the wells allegedly being diverted to bottom under adjoining properties to the lease upon which the well is located. This happened at Huntington Beach where many wells bottomed under tide lands, owned by the state, but at Huntington Beach agreements were reached by the state with those charged with drilling diverted holes. The same practice was followed at Long Beach where holes were bottomed under the cemetery. The present decision is the first to go as far and to hold as clearly.

New Area at Venice Completes Big Well

Los Angeles.—It has been left to Union Oil Company to complete the best well in the Playa del Rey extension of the old Venice field with Vidor 7, which started out flowing at a 1678-barrel rate and increased to 7780 barrels during the 24 hours ending at 7 a.m., March 4.

The well is flowing through casing, and is showing a gradual increase. Some think it will closely approach the 10,000-barrel rate when fully opened up. This hole is northeast of the extension discovery well on the lowlands and about half a mile from the first extension producer.

Vidor 7 was first placed on production February 26 for a flush production of 1678 barrels of 22.6 gravity clean oil, but the cut shows a slight increase as the production increased. It is bottomed at 6217 feet with 6⅝-inch cemented at 6015 feet. Liner was landed at 6244 feet and includes 211 feet of perforated.

The second completion of the week in the new area was D. D. Dunlap Oil Company's No. 1, which is bottomed at

6572 feet and was good for 2000 barrels of 22.8 gravity oil, cut eight percent. Due to lack of storage it was pinched back to 740 barrels, and the cut decreased to five percent. This well is up on the hill, was brought in under control and when the potential test is made it may make a better showing.

Nine other wells are drilling on the extension and at least three of them should be completions within 10 days. Four new locations have been staked and four rigs are up. Union Oil Company, is drilling Vidor 8, rigging is up for Del Rey 1, and Vidor 9 is a location.

Close drilling is not permitted in the new area, as the territory is within the Los Angeles city limits. Oil must be moved in pipe lines and only the necessary flow tanks are permitted.

Producers Agency to Oppose Certain Laws

Los Angeles.—The reorganized Oil Producers Agency of California, with Neal H. Anderson as president, is preparing to enter into a vigorous campaign in favor of California legislation in the interests of the oil producer and against proposed legislation that would work to the detriment of the oil industry of the state.

Anderson is meeting with oil producers at various central points, outlining to such gatherings, legislation now proposed by the state legislature at Sacramento, and resolutions are being offered and adopted as the occasion warrants. The agency has a special representative at Sacramento and producers are being asked to appear at various committee hearings.

Additional tax burdens on the oil industry is being opposed, and a reduction in the tax burden is suggested. A new severance tax is probable for California and the agency is seeking to see that such tax, if adopted, is equitably spread over all natural resource industries, limiting taxes imposed upon oil production to a percentage of the value of the product, rather than upon units of production.

Straight hole drilling legislation is now before the state legislature and the agency has named a committee of its members to oppose new legislation in favor of amendments and that its application be limited to new wells; that the authority of the oil and gas supervisor be confined to that portion of the well open or to be opened to production, and that all survey records be considered confidential.

A bill is up before the legislature which would make common carriers of pipe lines, and the agency approves this move.

Kettleman Hills Is Keeping Up Record

Los Angeles.—Three new oil wells at Kettleman Hills the past week were good for a total flush production of 13,060 barrels in spite of the fact one of the new producers was good for only 1015 barrels, far below the average expected of Kettleman Hills wells.

Standard Oil Company's No. 4-35J came in for 7875 barrels of 37.2 gravity clean oil at 8060 feet. String of 9⅝-inch was cemented at 7305 feet. Same company's 38-21J in Section 21-21-17, was completed at 8230 feet for 1015 barrels of 35.7 gravity oil. Both of these wells were open hole tests. Kettleman North Dome Association's 52-32J in Section 32-21-17 was completed at 8663 feet for 4170 barrels. of 35.1 gravity oil and 4,000,000 cubic feet of gas. In this hole 9⅝-inch had been cemented at 7692 feet and 6⅝-inch was run to 8655 feet. Perforations were at five different points.

North Dome Association now has two wells in process of completion. No. 65-30J, in Section 30-21-17, is flowing 2500 barrels to the sump but is cutting six percent. The total depth is 8766 feet with 9⅝-inch at 7832 feet. No. 78-20J, in Section 20-21-17, has been plugged to 8100 feet from 8640 feet and is flowing 410 barrels, cut 12 percent, by heads.

Standard Oil Company's 36-27J in Section 27-21-17 is bottomed at 7827 feet and has cemented 8⅝-inch at 7655 feet. Plug was placed at 7755 feet and well is being swabbed. Standard Oil Company is drilling eight other holes and is preparing to start two others.

Associated Oil Company's Wheply 5, Section 35-21-17, has cemented 8⅝-inch at 8173 feet, a few feet off bottom, and will drill ahead early in March. Petroleum Securities Company's Felix 4 is coring soft sand at 7960 feet and has set 9⅝-inch at 7546 feet. This well is in Section 35-21-17.

In the Middle Dome, Standard Oil Company's No. 38-29V, Section 29-23-19, with bottom at 3401 feet, has cemented 16-inch at 3395 feet.

California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
KETTLEMAN HILLS—		
Kettleman No. Dome Assn. No. 52-32J	4170	8663
Standard, No. 4-35J	7875	8060
No. 38-21J	1015	8230
MIDWAY—		
Frank Goldman, No. 1	100	1514
MOUNTAIN VIEW—		
Union, Kernco A-3	4400	5675
Wible 3	6475	5610
MOUNT POSO—		
General, Heisen 48	400	1840
Shell, Vedder 15	1100	1991
Union, S. & M.	660	1780
ROUND MOUNTAIN—		
Honolulu Oil Corp., No. 32	830	2210
MESA—		
M. & L. Oil Co., Knott 1	75	2110
LOMPOC—		
York-Smullin Oil Co., No. A-1	290	2850
VENTURA AVENUE—		
Associated, McGonigle 5	90	7005
LONG BEACH—		
Bernal Oil Co., No. 3	300	5875
J. H. Cochran, No. 10	705	4220
Goodrich Oil Co., No. 1	560	4080
Huntington Beach Inv. Co., No. 1-A	740	4290
Prosperity Oil Co., No. 1	450	4300
INGLEWOOD—		
Pacific Western Oil Co., Rubel 18	1910	3210
MONTEBELLO—		
Universal Cons., No. N-2	160	5136
VENICE—		
D. D. Dunlap Oil Co., No. 1	2000	6572
Union, Vidor 7	3545	6217
RICHFIELD—		
Jose Oil Co., Porter 1	*	4557
ATHENS—		
F. A. Speik, Johnson 1	*	5201

*Failures; †Junked; ¶Million cu. ft. gas.

Old Times Recalled By New Completions

Los Angeles.—California oil fields, week ending March 2, rang the bell with the completion of 22 oil wells with a total initial production of 37,850 barrels and two dry holes. This completion rate is the best since 1929.

The average monthly initial production in 1934 in California was only 47,553 barrels, compared with 22,875 barrels in 1933 and 13,070 barrels a month in 1932, the lowest point reached in years. During 1931, the monthly average was 30,370 barrels and in 1930, the average was 49,000 barrels.

Three new wells at Kettleman Hills were good for combined initial production of 13,660 barrels and Mountain View was second with a total of 10,875 barrels from only two new ones. Long Beach completed five new wells for 2755 barrels. The two new Venice wells totaled 5545 barrels, although one of these has increased to better than 7000 barrels. Five fields reported one completion each and Mount Poso had three new ones for 2160 barrels.

G. STUBBE, Manager of the Houston office of American Askania Corporation, recently returned from a business trip to Germany where he looked into latest developments of geophysical equipment and its possibilities in America. He also discussed plans for increasing the manufacturing facilities of American Askania Corporation in the United States. Mr. Stubbe reports a considerable increase in geophysical activities in Germany and other parts of Europe.

Michigan Output Again Above Million Barrels

Mt. Pleasant, Michigan.— Michigan crude oil production passed the million-barrel mark for one month the second time when in February the state's total monthly production was 1,032,811 barrels. January's production totaled 1,037,220 barrels, the first time Michigan had recorded a million-barrel month.

The Porter-Yost area accounted for the bulk of the February production with a total of 816,866 barrels. Daily runs in February averaged 36,886 barrels as compared to 33,458 barrels the previous month.

In February Michigan operated on a 75 per barrel well exemption with a 50 percent prorate the first half and 40 percent the last half. Based on an estimated run demand of 34,000 barrels daily, the new March prorate has been set at 30 percent.

The Michigan Proration Committee has applied for an increase in the federal allowable, fixed at 31,600 barrels daily for March, and seeks permission to run from 33,000 to 35,000 barrels daily.

Production by pools in January and February follows:

Pool	January	February
Yost-Porter	803,494	816,866
Greendale	107,707	107,586
Vernon-Leaton	83,028	71,395
Montcalm	8,548	6,691
Ogemaw	19,818	17,227
Saginaw-Lapper	3,240	2,940
Muskegon	7,359	6,664
Oceana	4,026	3,640
Total	1,037,220	1,032,811

Michigan State Lands Are Leased

Mt. Pleasant, Michigan.—A total of 3576 acres of state owned land were leased for oil and gas drilling March 1, by the Lands Division State Conservation Department, bringing a total bonus price of $4523. The average price was slightly over 75 cents per acre.

The acreage sold as follows: Mecosta County, Atena township 1167 acres, $22; Midland County, Edenville township 1286 acres, $2208; and Warren township (Midland County) 1125 acres, $2293.

All the acreage offered is located in wildcat territory, however, a test under development in Section 13, Warren, stimulated bidding.

Michigan Deep Test Continues Drilling

Mt. Pleasant, Mich.—Talbot Oil Company's McPherson 1, 3n-43-35, Livingston County, only active deep test in the state, continued to drill in Trenton lime last week below 5535 feet, after encountering the second showing of gas. Geologists have charted the Trenton at approximately 700-800 feet thick in this area and operators plan to continue drilling through the formation. Trenton was topped at 4991 feet, with gas shows logged at 5069 and 5360 feet. The test is being drilled with cable tools and has a cased hole (special six-inch) to the top of Trenton.

Six completions in the state this week include three oil wells, a gas well and two failures. W. F. Wiecher's Gray 1, 12n-8e-8, Tuscola County, will be abandoned at 3225 feet, a wildcat test. Atha Oil Company's Beougher 1, 13n-1e-25, Midland County, a two-mile extension test, also will be abandoned.

The number of active rigs in Michigan is due for an increase this month with drilling campaigns charted by a number of companies in the Midland and Isabella areas and in the Mecosta County gas area.

Michigan Cities Natural Gas Company has applied for a permit to purchase natural gas in a three-county area, Mecosta, Montcalm and Isabella counties, from Michigan Public Utilities Commission. If this permit is approved, probably the Consumers Power Company will extend its natural gas main from the Broomfield pool into Millbrook, Belvidire and Hinton townships to purchase natural gas from developed areas, now without a market, with Michigan Cities Company acting as the purchasing company.

Opening of a market in this area is expected to greatly stimulate natural gas development, with a field running 15 to 30 miles on a southeast trend.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MIDLAND COUNTY—		
Pure Oil Co., Howard 6, 13n-1w-17, sw sw se	250	3421
Atha Oil Co., Beougher 1, 13n-1e-25, c-s-nw	*	3530
ISABELLA COUNTY—		
Chartiers Oil Co., Pollard 2, 15n-4w-1, c-nw nw	¶½	1291
OGEMAW COUNTY—		
Webber Oil Co., Schick 1, 22n-2e-29, nw nw ne	30	2710
SAGINAW COUNTY—		
Smith Pet., Palberg 2, 10n-6e-20, nw se	25	1532
TUSCOLA COUNTY—		
W. F. Wiecher, Gray 1, 12n-8e-8, ne sw sw	*	3225

*Failures; †Junked; ¶Million cu. ft. gas.

Eastern Field Completions

PENNSYLVANIA

Company, Well and Location	Init. Prod. Bbls.	Depth
WASHINGTON COUNTY—		
Naural Gas of West Virginia, T. F. Ealy 1	¶	2813

WEST VIRGINIA

Company, Well and Location	Init. Prod. Bbls.	Depth
CALHOUN COUNTY—		
Mud Lick O&G Co., Bennington 2	¶	1851
Godfrey L. Cabot, Inc., Henry Knight 1	¶	2032
Howard Bros., L. F. Norman 1	¶	2168
L. & W. Riggs, M. F. Crawley 1	¶	2580
H. J. Jarvis & Co., J. S. Rogers 1	¶	1412
TYLER COUNTY—		
Howard Hall & Co., C. & A. Haught 1	3	967
DODDRIDGE COUNTY—		
Nathan Cain, Frank Finley 1	¶	2075
GILMER COUNTY—		
McCall Drlg. Co., E. C. Rohrbaugh 2	¶	2158
Friendly O&G Co., H. C. Stalnaker 1	¶	1156
PLEASANT COUNTY—		
Tyler Oil Co., Wm. Johnson 1	*	878
ROANE COUNTY—		
K. M. Hunt & Co., Oscar Kelley 1	*	1852
BOONE COUNTY—		
Pure Oil Co., Federal Coal 72	¶	3056
Williams Coal 261	¶	3169
WIRT COUNTY—		
Glen Roberts, Withers & Co. 1	¶	2700
CABELL COUNTY—		
R. H. Adkins & Co., Starcher 1	¶	3821
Empire State Gas Co., McCoy 1	¶	3256
Shale Gas Co., B. Beckett 1	¶	3635
PUTNAM COUNTY—		
Red House Homestead, Fee 2	¶	2557
KANAWHA COUNTY—		
S. V. Avis, Copen Heirs 1	*	....

SOUTHEASTERN OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
MONROE COUNTY—		
A. W. Lucas & Co., F. E. McCaley 3	¶	1138
Gordon Greene & Co., Eliza Baker 3	¶	1150
Local Co., W. E. Bruny 2	*	1763
WASHINGTON COUNTY—		
D. T. Orndorff, Phillips Roe, Jr. 4	15	1305
Kelvin Corp., H. Foreman 16	*	460

NORTHWESTERN OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
WYANDOT COUNTY—		
McPheron & Co., Liddie Geir 1	¶	1339
Miller & Co., Lemma Bogard 1	¶	1533

CENTRAL OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ATHENS COUNTY—		
A. D. Townsend, Leo Douglass 2	¶	658
LORAIN COUNTY—		
McMillan & Co., Sylvia Jackson 2	¶	2434
KNOX COUNTY—		
H. E. Perkins, Jennie Patterson 1	*	2547
MEDINA COUNTY—		
Glen Yannayon, Glen Yannayon 3	¶	152
Kemrow Co., Brach & Hellman 4	2	....
Ohio F. G. Co., Roy W. Allis 1	*	....
MEIGS COUNTY—		
Clyde Cody, W. B. Chaney 4	*	1039
O. D. Jones, Ira E. Price 14	¶	2109
Houston & Co., Nicholas Hrs. 2	¶	2005
PERRY COUNTY—		
Kachelmacher Oil Co., Hemlock Coal Co. 8	10	3670
Wiser Oil Co., Franklin King 1	¶	2841
TUSCARAWAS COUNTY—		
Frank Walton & Co., Joseph Dunlap 1	*	5482
STARK COUNTY—		
Brendel Prod. Co., S. G. Wright 1	¶	4495
Cunningham Nat. Gas Co., Chas. Wolforth 1	¶	4580
VINTON COUNTY—		
Hazlett & Walters, W. R. & M. B. Dennison 1	*	465
Barton & Utsinger, W. F. & Emma Miller 1	*	500

*Failures; †Junked; ¶Million cu. ft. gas.

Drilling Reports on Important Wildcats

MICHIGAN

MIDLAND COUNTY — Goll-Graves-Mechling's Oviatt 1, 16n-2e, sec 24, sd 950 ft. Foster and Wicklund's Neal 1, 16n-2w, sec 13, dr 1800 ft. Howard Patterson's Haskins 1, 13n-2e, sec 26, sd 3705 ft.

ISABELLA COUNTY—Michigan Gas & Oil Co.'s Hanson 1, 13n-4w, sec 33, rig. G. G. Hanner's Dargitz 1, 13n-4w, sec 20, sd 335 ft. Pure Oil Co.'s Baker 1, 13n-5w, sec 15, dr 3990 ft.

OGEMAW COUNTY—Patterson & Louis' Price 1, 22n-3e, sec 31, sd 2460 ft. Lupton Oil Co.'s Rose 1, 24n-3e, sec 35, rig.

MONTCALM COUNTY — L. E. Duvall's Eiknorch 1, 11n-10w, sec 13, sd 1343 ft. J. W. Leonard's Durbin 1, 10n-5w, sec 11, so 2800 ft, dr 2990 ft. Golden Oil Co.'s Steffenson 1, 10n-8w, sec 5, dr 1000 ft.

MECOSTA COUNTY — Jetter Oil Co.'s Parsley 1, 14n-10w, sec 19, fsg 275 ft. Columbia Oil Co.'s Freeman 1, 13n-8w, sec 1, dr 500 ft. Alma-Mecosta Synd.'s Lewis 1, 15n-8w, sec 15, lcn. Jasmid Oil Co.'s Coopersville Bank 1, 13n-10w, sec 22, sd 850 ft. Vale and Ward's Flowers 1, 15n-7w, sec 33, sd 347 ft. Sherman Drilling Co.'s Scheibe 1, 15n-7w, sec 13, sd 425 ft.

GLADWIN COUNTY—M. F. Whitehill's Spicer 1, 17n-2w, sec 11, lcn. Roosevelt Oil Co.'s Haviland 1, 17n-2w, sec 4, dr 3040 ft. Sun Oil Co.'s Heintz 1, 17n-1w, sec 31, co 500 ft. Beaverton Oil Co.'s Ross 1, 17n-1w, sec 7, rig.

LIVINGSTON COUNTY—Talbot Oil Co.'s McPherson 1, 3n-4e-35, sg 5315 ft, dr 5535 ft. H. Snell et al's Zebb 1, 2n-5e, sec 34, sd 5017 ft.

GRATIOT COUNTY—Chas. Weller's Baker 1, 9n-3w, sec 9, dr 1200 ft.

ARENAC COUNTY—McClanahan Oil Co.'s Heath Ranch 1, 19n-3e, sec 31, rig.

ALLEGAN COUNTY—Bear Creek Development's Fore 1, 3n-14w, sec 29, sd 1850 ft.

ROSCOMMON COUNTY—Black Diamond Oil Synd.'s Vaughan 1, 24n-4w, sec 28, re-csg 3250 ft.

CLINTON COUNTY — Elba-Duplain Oil Co.'s Stratton 1, 8n-1w, nw nw ne-4, lcn.

WEXFORD COUNTY — M. J. Ingold's Webb 1, 22n-9w, c-sw-13, sp.

MASON COUNTY—Dragoon Development's Young 1, 17n-15w, sec 15, sd 1900 ft.

HURON COUNTY — Wallace Markle's Opaka 1, 15n-11e, sec 4, dr 900 ft.

CALIFORNIA

KERN COUNTY

ALPAUGH—Trico Oil & Gas Co.'s No. 4, 3-25-23, lcn. To skid rig from No. 2.

BUENA VISTA LAKE—Shell Oil Co.'s B. V. A. 1, 9-32-25, td 4703 ft. R.

CALIENTE—Signal Oil & Gas Co.'s Batz 1, 36-29-29, spud Feb. 25. Portable rig, cable tools. S. P. Land 1, 31-29-30, sd 2290 ft.; S. P. Land 2, 31-29-30, dr 305 ft.

COMANCHE POINT—Comanche Oil Co.'s No. 1, 15-32-29, sd 4325 ft. Tejon Ridge Oil Co.'s No. 1, 23-32-29, fsh, td 1605 ft.

DEVIL'S DEN—Amerada Pet. Corp.'s No. 2, 17-26-19, dr brown shale 2078 ft. Richfield Oil Co.'s Alferitz 2, 14-25-18, dr shale 2295 ft.

NEAR EDISON—Cara Vel Pet. Corp.'s No. 1, 19-30-30, sd 1940 ft. H. B. Oil Co.'s Clemens 1, 6-30-30, wocs 8⅝ in. 325 ft, td 400 ft. Mountain View Dev. Corp.'s Spangler 1, 12-30-28, td 5098 ft, wocs 7 in. 4994 ft.

GOULD HILLS — The Texas Co.'s Jared How 1, 29-29-21, dr brown shale 4078 ft.

GREENFIELD—Big McKittrick Oil Co.'s Houghton 1, 7-31-28, td 3645 ft wocs 9-in 1500 ft, surface pipe went bad.

LOST HILLS—Standard Oil Co.'s United 1, 2-26-20, dr hard brown shale 2160 ft

NEAR MOUNTAIN VIEW — Hogar Pet. Co.'s Symons 1, 4-31-29, dr shale 5520 ft.

SEMITROPIC—Standard Oil Co.'s Hill 1, 8-27-23, td 3193 ft, repairing equipment.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

* —*dry hole abandoned well.*	owdd —*old well drilling deeper.*
‡ —*salt water (completions).*	owpb —*old well plugging back.*
† —*junked and abandoned.*	pb —*plugged back or plugging back.*
¶ —*million feet of gas.*	r —*reaming.*
abd —*abandoned.*	rog —*rig on the ground.*
bbls —*barrels.*	rur —*rigging up rotary tools.*
b.s. —*basic sediment.*	rust —*rigging up standard tools.*
csg —*casing.*	sd —*shut down.*
co —*cleaning out.*	sdtr —*sidetracking.*
dd —*drilling deeper.*	sg —*show gas.*
dk —*derrick.*	si —*shut in.*
dr —*drilling.*	so —*show oil.*
fsg —*fishing.*	so & g —*show oil and gas.*
ft —*feet.*	spd —*spudding.*
hfw —*hole full of water.*	sr —*straight reaming.*
in —*inches.*	sw —*salt water.*
lcn —*location.*	td —*total depth.*
m —*milling.*	ur —*underreaming.*
mim —*moving in materials.*	wih —*water in the hole.*
mit —*moving in tools.*	wo —*workover.*
mot —*milling on tools.*	wocs —*waiting on cement to set.*
n, s, e, w, —*north, south, east, west.*	wosr —*waiting on standard rig.*
oih —*oil in hole.*	

SOUTH BUTTONWILLOW — Seeple Oil Corp.'s No. 1, 5-30-24, sd 3730 ft.

SOUTH DOME — Continental Oil Co.'s Gatchell 28-7, 7-25-20, dr hard shale 3165 ft.

TEMBLOR HILLS—Robt. Foster's No. 1, 2-32-22, td 2192 ft, co.

WHEELER RIDGE—Badger Oil Co.'s El Tejon 1, 31-11-19, td 6229 ft. Plug 3600 ft, to redr. Reserve Oil & Gas Co.'s Tejon Ranch 1, 2-10-19, dr hard shale 3201 ft.

WEED PATCH—Associated Oil Co.'s DiGiorgio 1, 3-31-29, td 5501 ft, plug 5290 ft, swabbing water, traces of oil, may abn.

KINGS COUNTY

ALPAUGH—Trico Oil & Gas Co.'s Magee & Stone 3, 36-24-22, sd 2608 ft, tested wet.

PYRAMID HILLS—General Pet. Corp.'s Martin 1, 20-24-18, spud Feb. 21.

MISCELLANEOUS

FRESNO COUNTY—Russ Oil Synd.'s No. 1, 28-12-11, sd 5015 ft.

HUMBOLDT COUNTY—The Texas Co.'s Eureka 1, 1-3-2, dr shale 4645 ft.

MADERA COUNTY—Pure Oil Co.'s Chowchilla 1, 7-10-14, td 8375 ft. Plug 8085 ft, sd.

SACRAMENTO COUNTY—Great American Pet. Co.'s Howard 1, 25-2-8, dr shale 2962 ft.

SAN JOAQUIN COUNTY—Amerada Pet. Corp.'s F.L.D.L., 15-2-5, material on lcn.

SUTTER COUNTY—Buttes Oilfields' No. 2, 35-16-1, td 7014 ft, washing hole with chemicals to retest.

TULARE COUNTY — Baker-Grover Co.'s No. 1-A, 10-23-27, lcn.

SANTA BARBARA COUNTY

GOLETA—Shell Oil Co.'s Bishop 1, 20-4-28, td 6508 ft. Wocs 6⅝-in 5136 ft.

LOMPOC—Lompoc Pet. Co.'s Beauterbough 2, 18-7-34, td 2975 ft. Wocs 7-in 2570 ft.

NAPLES—Power & Snow's No. 1, 7-4-29, td 5710 ft. co.

SUMMERLAND—Ortega Oil Co.'s Williams 1, 16-4-26, sd 4583 ft.

SAN LUIS OBISPO COUNTY

SEE CANYON—Farrell Pet. Co.'s No. 1, 18-31-12, sd 1420 ft. To drop from report.

CHOLAME—Willett Oil Assn's Jack 2, 10-25-15, td 3560 ft to plug bottom.

VENTURA COUNTY

BARDSDALE—El Rancho Oil Co.'s Elkins 1, 9-3-19, spudded and sd. Daniel Fisher's Elkins 1, 5-3-19, sd 762 ft. To drop from report.

HOOPER CANYON—Oil Ridge Oil Co.'s Moran 3, 1-4-19, dr os 1530 ft.

LAS POSAS—Las Posas Pet. Co.'s Mahan 1, 22-3-20, dr shale 7800 ft.

OJAI—Continental Oil Co.'s Pirie 1, 12-4-23, dr shale 1695 ft.

RINCON—Woodrow Pet. Corp.'s Woodrow 1, 4-3-24, sd 7615 ft.

SANTA PAULA — Edw. M. Lesperance's Boosey 1, 31-4-20, td 570 ft, fsh. J. W. Mosher's No. 1, 22-4-21, sd 2300 ft.

SANTA SUSANA—E. N. Dakes' No. 1, 6-2-17, sd 300 ft. To drop from report.

SEPE—Supreme Oil Co.'s No. 1, 1-4-20, rur.

SHIELLS CANYON — The Texas Co.'s Shiells 128, 4-3-19, dr shale 5635 ft.

TOREEY CANYON—A. N. Macrate's No. 1, 32-4-18, td 4038 ft to deepen.

SIMI—Dawson Oil Co.'s No. 1, 8-2-17, sd 1910 ft.

SOUTHERN CALIFORNIA

ARTESIA—Vanco Dev. Co.'s Millard 1, 25-3-12, sd 100 ft.

BREA CANYON—Pressel-Perry-Tull's Baird 1, 30-2-9, sd 2600 ft.

EL SEGUNDO—Republic Pet. Co.'s No. 1, 18-3-14, spudded Feb. 27.

FAIRVIEW—Explorers Dr. Co.'s Norris 1, 9-6-10, co td 960 ft.

HERMOSA BEACH—Corniel Oil Corp.'s No. 1, 31-3-14, td 3900 ft co. Aron H. Hover's Bryant 1, 31-3-14, td 4200 ft. Plug 3940 ft co.

HUNTINGTON BEACH on tidelands—Black Eagle Oil Co.'s No. 1-B, permit 194, 32-5-11, sd 4702 ft.

MANHATTAN BEACH—Bethlehem Explor. Co.'s Martin 1, 30-3-14, dr sand and shale 5890 ft.

NEWPORT—Piatt & Collin's No. 1, 14-6-10, td 2574 ft. To resume dr.

PICO—Frontier Oil Co.'s No. 1, 12-2-12, dr shale 2205 ft.

PUENTE—N. O. Shively's No. 1, 23-2-10, td 3145 ft. Wocs 8⅝-in 2311 ft.

SAUGUS — International Oil Developers' Powell 1, 34-5-16, td 4335 ft. Testing water shutoff.

SURF—B & B Oil Co.'s No. 1, 19-6-10, sd 4576 ft.

RIVERSIDE COUNTY—Corona Oil Co.'s Wardlow 1, 27-3-7, rigged and idle.

SAN BERNARDINO COUNTY—Great American Pet. Co.'s Gapco D-1, 18-2-8, sd 305 ft. No reports from wells in San Diego County.

KANSAS

BARBER COUNTY — Southern Drilling Co. et al's Davis 1, sw se ne 13-34s-15w, sd 2960 ft.

BARTON COUNTY — Atlantic Oil Co.'s Vaniman 1, csw ne 15-20s-12w, no test. Treleaven & Brimm et al's Haas 1, sw sw sw 30-18s-15w, pumped 320 bbls oil 24 hrs. Lario Oil & Gas Co. et al's Nuss 1, nw sw sw 11-16s-14w, lcn. D. I. Hall et al's Arnold 1, se se sw 19-18s-15w, mit. Wolf Creek's Kraft 1, sw sw sw 26-61s-11w, ru. Suppes & Witts' Hayes 1, sw sw sw 6-16s-14w, ponds. McMorrow & Spencer's Hagen 1, ne ne ne 33-20s-11w, spd.

BUTLER COUNTY — Hay & Cameron's Johnson 1, nw nw se 16-26s-6e, lcn. Trees & Harwood's Henley 1, sw se ne 7-24s-8e, ru.

CLAY COUNTY—Seidel Brothers' Younken 1-A, cs¼ se nw 21-9s-4e, td 1772 ft, cement cave.

COWLEY COUNTY—Lassen's Ferguson 1, se se nw 21-30s-8e, 1000 gal acid and pumped 60 bbls oil. A. McCoy's Brandenburg 1, sw sw se 17-34s-5e, ru. Lloyd, Frost & Study's Weathered 1, sw se se 28-31s-3e, mim.

DICKINSON COUNTY—Dutch Oil Co.'s Phillips 1, cne nw 15-15s-1e, sd 2714 ft.

ELK COUNTY—Lee Tiffy et al's Stonebreaker 1-A, se se se 32-28s-11e, dr 1115 ft.

ELLSWORTH COUNTY—Carter Oil Co. et

al's Teubner 1, se se nw 26-17s-9w, set 8-in csg 2378 ft, dr 2530 ft. Pryor & Lockhart et al's Gregory 1, se se se 19-16s-8w, sd 600 ft. Lario Oil & Gas Co. et al's Wright 1, sw sw ne 17-16s-8w, sd 300 ft. Lario Oil & Gas Co. et al's Central National Bank 1, se se nw 33-15s-8w, lcn. Lario Oil & Gas Co. et al's State 1, sw sw sw 29-15s-8w, ponds.

HARVEY COUNTY—H. H. & S. Oil Co.'s Frizzle 1, ne ne se 31-23s-2w, ponds.

KINGMAN COUNTY—Sam Jarvis et al's Morrissee 1, csw ne 23-30s-10w, rig.

MARION COUNTY—Youker et al's Bernhardt 1, cse nw 7-18s-4e, set 15-in csg 137 ft, td 945 ft, running 12-in csg.

McPHERSON COUNTY—Lario Oil & Gas Co.'s Schrag 1, nw se sw 22-19s-4w, hfw 3818 ft, dr 3857 ft. Lario Oil & Gas Co.'s Base 1, sw sw sw 22-20s-2w, set 6-in csg 3158 ft, hfw 3505-10 ft, fsg. Palmer Oil Corp.'s Swenson 1, ne ne sw 11-18s-3w, dr 1100 ft. Brosius et al's Hanson 1, ne ne sw 15-17s-2w, sd 105 ft. Shell Pet. Corp.'s Wenger 1, ne ne ne 2-20s-1w, dr 140 ft. Carey & Miller's Husband 1, se se nw 6-19s-2w, mim.

OSAGE COUNTY—Jim Edwards' Deitrick 1, cnw se 21-14s-15e, sd 590 ft.

NESS COUNTY—Texas Co. & Gypsy Oil Co.'s Goodman 1, csw sw 21-19s-23w, dr 4742 ft. Phillips Pet. Co.'s Young 1, cnw sw 13-18s-21w, sd 75 ft.

RENO COUNTY — Priveet Drilling Co.'s Crotts 1, ne nw ne 27-26s-10w (owdd), sd 3712 ft. Johnson & Carey et al's Dyck 1, se ne se 35-22s-5w, pb 3978 ft, no test. Bradley's Olmstead 1, sw sw sw 22-22s-7w, mim.

RICE COUNTY—Allison & Fitzwilliams et al's Stumps 1, nw nw sw 4-18s-10w, set 10-in csg 1880 ft, dr 2075 ft. Foraker-Neickerson et al's Lyon 1, se se ne 27-20s-8w, set 8-in csg 2402 ft, dr 2460 ft. Vickers Pet. et al's Gouldner 1, se ne nw 16-18s-9w, ru. Langston et al's Markle 1, ne ne sw 1-20s-9w, td 3082 ft, ur 6-in csg. Day's Mason 1, nw ne ne 28-21s-7w, br. Gypsy Oil Co.'s Kessling 1, nw nw sw 10-20s-9w, dr 2880 ft.

ROOKS COUNTY—Stearns-Streeter et al's Hoskins 1, se sw se 34-9s-16w, dr to 3106 ft, 1400 ft oih, no test. Carman & Hershey's Nelson 1, nw nw ne 27-10s-16w, rig. Tree Oil Co. & Findeiss' Johnson 1, sw sw se 26-10s-19w, mim.

RUSH COUNTY—Flynn et al's Hartman 1, sw se nw 4-18s-16w, rig. Lario Oil & Gas Co. & Phillips Pet. Co.'s Benbow 1, nw ne ne 12-17s-19w, dr by tools 3192 ft. Morgan & Flynn et al's Schlegel 1, se se nw 26-17s-16w, mim.

RUSSELL COUNTY—Lario Oil & Gas Co. et al's Moore 1, se se nw 34-13s-12w, hfw 3422-25 ft, D&A. J. Brouk & R. D. Bailey's Kluesner 1, nw nw se 34-15s-12w, ru. El Dorado Refining Co.'s Walz 1, se ne nw 29-13s-11w, set 8-in csg 3005 ft, sd 3160 ft. Hartman & Blair's Krause 1, ne nw nw 5-15s-15w, dr 2675 ft. Wolf Creek et al's Penn Mutual 1, sw sw sw 22-15s-15w, cellar. Hartman & Blair's Furthmeyer 1, ne ne ne 19-12s-13w, sd 2405 ft. Hartman & Blair's Garrett 1, sw sw nw 24-13n-12w, mim. Murphin's Funk 1, sw sw sw 19-12s-13w, spd and sd. Reserve et al's Moore 1, cnw nw sw 15-13s-12w, mim. Hartman & Blair's Hildebrandt 1, nw ne sw 12-14s-14w, lcn. Vernon & Murphin's Becker 1, ne ne ne 32-15s-14w, lcn.

SALINE COUNTY—Dieter et al's Herrington 1, ne nw se 3-13s-1w, sd 2700 ft.

SEDGWICK COUNTY—Allison & Fitzwilliams' Struthers 1, ne sw sw 34-28s-2w, fsg 3295 ft. Syndicate Oil & Gas Co. et al's Ratzlaff 1, ne nw nw 30-26s-2e, set 8-in csg 2912 ft, co 2980 ft. Aladdin Pet. et al's D. Lauck 1, se ne nw 21-28s-2e, set 6-in csg 2968 ft, small flow oil 3020 ft, hfw 3285 ft, dr 3340 ft. Magnolia Pet. Co.'s Bartholomew 1, se se sw 30-27s-4w, dr 4145 ft.

STAFFORD COUNTY—Atlantic Oil Co. & Phillips Pet. Co.'s Guthrie 1, cnw nw 15-25s-11w, dr 3930 ft. Atlantic Oil Co.'s Hohner 1, nw se se ne 31-23s-14w, 1500 ft water in hole. Lario Oil & Gas Co. et al's Tudor Morgan 1, se se nw 23-24s-13w, rig.

SUMNER COUNTY—Tom Palmer's Wentworth 1, nw nw ne 9-35s-2e, td 3430 ft, pb 3426 ft, shot 15 qts 3412-27 ft, no test. D. J. Wilson et al's Clark 1, csl nw 15-35s-1w, mim. Wakefield et al's Newton 1, se se se 21-30s-2e, rig. Shell Pet. Corp.'s Green 1, se sw nw 3-33s-2e, ru.

TREGO COUNTY — Central Commercial Drilling Co.'s Wagg 1, nw nw se 17-13s-21w, fsg 1600 ft. A. D. Morton's Jones 1, se se se 20-12s-23w, dr 700 ft.

OKLAHOMA

ATOKA COUNTY—H. F. Potts' Nichols 1, sw sw nw 32-2s-9e, td 1375 ft, running csg. Malernee et al's D. K. O. Land Co. 1, cse se 35-2s-13e, sd 3115 ft.

BECKHAM COUNTY—Fred Coogan et al's Shelton 1, sw sw sw 33-10n-25w, dr 735 ft.

BRYAN COUNTY—C. B. Welch's M. Collins 1, sw sw nw 19-8s-8e, mach. Trio Oil Co.'s Gilbert 1, se se se 25-8s-7e, mach.

CADDO COUNTY—H. W. Lee et al's Stacy Ferrel 1, sw ne ne 3-6n-13w, lowering 8-in csg. Denver P. & R. Noe 1, nw sw sw 34-10n-10w, moving in gas lift equipment, est good for 50 bbls oil daily.

CARTER COUNTY—Carter Oil Co.'s Humble-Williams 3, sw ne sw 27-2s-3w, td 4230 ft. Waco Turner's A. F. Munson 1, ne nw ne 35-5s-2w, mir.

CHOCTAW COUNTY—Rhodes et al's Pussumik Savings Bank 1, se se se 1-5s-17e, lcn.

CLEVELAND COUNTY—Sinclair Prairie Oil Co.'s Franklin Community 1, se nw se 21-10n-2w, dr 3135 ft.

COAL COUNTY—E. W. Whitney et al's Miller 1, se se ne 10-2n-8e, otd 1814 ft, dd to 2950 ft, now pulling 5-inch csg to dd.

COMANCHE COUNTY — F. F. Stevens' Green 1, se se sw 2-1n-13w, dr 1280 ft. H. W. Baker's Miller 1, se sw se ne 22-2n-13w, sd 120 ft. Henry Rosenthal et al's Au-chi-re-ah 1 "B", nw nw nw 5-1n-9w, td 1493 ft, wocs. Oscar Jones' Sheetz 1-A, ne ne sw 26-3n-10w, abd.

GARFIELD COUNTY—Herndon Drilling Co. et al's Allen 1, cne ne sw 35-24n-3w, dr 3030 ft.

GARVIN COUNTY — National Producing Co.'s Littrell 1, ne ne ne 31-2n-3w, dr 1340 ft. George L. Pace's Smith 1, sw sw ne 35-1n-1e, spd and sd. Charles E. Carter et al's Wood 1, nw sw se 5-4n-3e, sd 1885-90 ft, sso, cored 1892, sd 2070 ft. Anderson-Kerr et al's 1, nw nw se 17-4n-1w, lcn.

GRANT COUNTY — Helmerich-Payne's Crouse 1, cne sw 29-25n-8w, td 6036 ft, dr cement plug.

GREER COUNTY—Fred Morgan et al's H. G. Carder 1, csw se 19-4n-22w, rog.

HUGHES COUNTY—Freeman et al's Kite 1-A, nw nw ne 8-6n-10e, sd 598 ft. Dandridge & Crane's Mead 1, nw nw ne 17-5n-9e, sd 950 ft. Turner et al's Williams 1, csw sw sw 35-7n-10e, moving out tools. Amerada Pet. Corp.'s Adams 1-A, ne ne sw 31-9n-9e, cored 3357-65 ft, dr 3395 ft.

JACKSON COUNTY—Palo Duro Oil Co.'s Ealum 1, se se sw 16-2n-21w, dr 650 ft. Scheig's James 1, ne ne ne 23-1n-20w, sd 1835 ft. Associated Oil Co.'s Harrell 1, ne ne sw 13-1s-21w, dr 150 ft. Selby Oil Co.'s R. C. Holt 1, se se sw 15-2n-20w, dr 75 ft. Petroleum Prod. Co.'s Cole 1, sw sw se 34-2n-20w, dr 1451 ft, oil exhausted, est 25 bbls oil daily. Whatley & Whatley's Holt 1, nw sw se 20-1n-20w, dr 265 ft. Scheig et al's C. W. Cole 1, ne se se 5-1n-20w, dr 285 ft. A. H. Emenhiser's Murrell 1, se sw se 17-3n-21w, sd 150 ft. Jack Kilgore et al's Wooldridge 1, se se ne 15-3n-21w, lcn. Golden & Cochran's L. H. Duncan 1, sw sw ne 34-2n-21w, mach. Scheig Oil Co. et al's Sue Richardson 1, sw nw se 30-1n-19w, lcn.

JEFFERSON COUNTY—Farlyn Oil Co.'s Seay 28, nw se se 3-7s-5w, dr 100 ft. Gypsy Oil Co.'s J. James 1, sw se se 30-6s-6w, lcn.

KAY COUNTY—Harris-Haun's Schuessler 1, cnw sw 3-28n-2e, fsg 2620 ft. Max Kelly's Spore 1, nw nw se 17-27n-2e, lcn.

KINGFISHER COUNTY—Black Gold Pet. Co.'s Cole 1, csw ne 24-18n-5w, dr 6403 ft.

LINCOLN COUNTY—Charles Balph et al's Young 1, cn½ nw nw 23-15n-5e, sd. Slick-Urschel et al's Miller 1, nw nw se 25-15n-3e, dr 4640 ft.

LOGAN COUNTY — Sinclair Prairie Oil Co.'s School Land 1, se se se 36-17n-1w, td 5335 ft, rust and sd. Shell Pet. Corp. et al's Hirzel 1, se sw sw 7-16n-2w, cored 5897-5914 ft, coring ahead. Slick-Urschell's Pennington 1, csw ne 10-16n-1w, dr 3925 ft. J. C. Shaffer et al's Watson 1, cnw ne 15-15n-4w, dr 2985 ft. Sinclair Prairie Oil Co. & Slick-Urschel's Koatsch 1, sw sw sw 23-15n-3w, dr 4300 ft. Mid-Continent's 1, se se nw 25-15n-1e, lcn.

LOVE COUNTY — Amerada Pet. Corp. & Stanolind Oil & Gas Co.'s Westheimer & Daube 1, nw se se 27-6n-2e, td 1872 ft, pb to straighten.

MARSHALL COUNTY — Paul R. Robb's Vittetoe 1, cne se 11-5s-4e, dr 5094 ft.

McCLAIN COUNTY—Anderson & Kerr's Newburn 1, nw sw ne 24-5n-3e, cellar and pits.

McCURTAIN COUNTY—J. V. Schrivner et al's Central Life Association 1, ne sw sw 24-6s-21e, sd.

MURRAY COUNTY—Equitable Oil & Gas Co.'s Scott 1, csl n½ nw sw 15-1s-3e, hfw 1369 ft. Manahan Oil Co.'s Ward 1, ne se nw 18-1s-3e, tight hole 1000 ft. Gillette & Kroeger's Robbins 1, ne ne se 31-1n-6e, rog. Equitable Oil & Gas Co.'s Baer 1, sw nw nw 21-1e-3e, cellar. Equitable Oil & aGs Co.'s Ferguson 1, ne ne sw 36-1s-3e, cellar and pits.

NOBLE COUNTY—Marathon Oil Co.'s Gilbert 1, ne ne ne 24-22n-2e, flowed 245 bbls oil 15½ hrs, est ¾ million gas.

OKFUSKEE COUNTY—Mid-Continent Pet. Corp.'s Haney 1, sw se ne 24-12n-8e, pb 4135 ft, 1000 ft gas, some oil. Amerada Pet. Corp. et al's Jaynes 1, nw nw sw 20-10n-10e. 10 million gas 3704 ft, fsg 3744 ft.

OKLAHOMA COUNTY—R. Carl Larkin's Brobine 1, sw sw ne 33-13n-5w, rig. Anderson-Kerr et al's Linn 1, sw sw nw 17-14n-2w, ru. W. H. Atkinson et al's Reed 1, ne ne ne 4-12n-3w, ru. Gypsy Oil Co.'s Schock 1, nw sw sw 2-14n-3w, lcn.

PAYNE COUNTY — Marathon Oil Co.'s Potts 1, csw sw 27-19n-2e, bailed down 1500 ft, hfw and sso, may abn.

PITTSBURG COUNTY — McAllister Pet. Co.'s Chunn 1, se se nw 29-4n-14e, set 12-in csg 1530 ft, collapsed, sd. P. H. Gray et al's Lee 1, nw nw se 12-5n-13e, sd 1050 ft.

PONTOTOC COUNTY—J. D. Sledge & Jack Lynch's Thompson 1-A (twin) sw ne sw 1-1n-7e, td 4659 ft, 150 oih 4320-26 ft. Paramount Oil Co.'s Graham 1, sw se sw 13-1n-2e, dr 3187 ft. H. M. Marcum's Magnuson 1, sw se se 23-2n-7e, dr 1810 ft. Mudge Oil Co.'s Clampett 1, sw nw nw 10-2n-6e, dr 915 ft. Southern Oil Corp.'s Vierson 1, ne ne se 17-3n-7e, mach. Crabb-Craw Oil Co.'s Breco 1-A, se ne sw 3-4n-6e, pumped 10 bbls oil 24 hrs. Southern Oil Co.'s Walker 1, nw nw sw 11-4n-6e, sd 820 ft. Crabtree's Chandler 1, ne se sw 4-5n-6e, sd 110 ft. Gillette & Kroeger's Duver 1, nw nw se 36-1n-6e, sd 1162 ft.

POTTAWATOMIE COUNTY — C. W. James et al's Neal 1, nw se sw 4-5n-3e, so 3641-45 ft, td 3705 ft, running 6-in csg.

PUSHMATAHA COUNTY—William Ungerman et al's Messer 1, se sw sw 35-3s-18e, (owdd), td 2795 ft, 600 ft oih.

SEMINOLE COUNTY — Verser & Clay's Thomas 1, ne se nw 1-6n-6e, sd 2802 ft. Ray Dorris & J. T. Hall's Dorris 1, se se sw 31-10n-7e, sd 390-420 ft, td 500 ft. Wofford Drilling Co.'s Abbott 1, ne ne ne 33-8n-7e, rig. Wofford Drilling Co. et al's Thomas 1, nw nw se 8-6n-7e, dr 3725 ft.

STEPHENS COUNTY—Wm. Angle's Calloway 1, se se ne 17-1n-8w, lcn. J. W. Madison's Tussey 1, sw se nw 24-1n-4w, (owdd), rig down and dr pipe in hole, sd.

WASHITA COUNTY—Anadarko Basin Oil Co.'s Ash Wolf 1, ne ne sw 23-9n-17w, ru and sd.

NEW MEXICO

EDDY COUNTY—Geo. F. Getty Oil Co.'s Andrew Dooley 7, swc nw 24-20s-29e, 6000-foot test, elev 3309 ft, dr 1300 ft.

LEA COUNTY — Anderson-Prichard Oil Corp.'s Brett-Conoco 1, c ne nw 7-20s-37e, Monument area, mim; Fisher 1, c se ne 8-20s-35e, cem 12½ in cas 70 ft. Amerada Pet. Corp.'s State 1-D, c nw nw 1-20s-36e, Monument area, dd from 3929 to 3954 ft and s&f 695 bbls oil with trace bs&w last 24 hrs, killed to pb to 3929 ft. Argo Royalty Co.'s Byrl A. Buerner-Texas Co. 1, near c ne ne 6-20s-32e, elev 3513 ft, dr 2475 ft. E. B. Guess et al's C. W. Justis 1, swc nw nw 20-25s-37e, sd 1160 ft. R. H. Henderson et al's P. J. Langley 1, c se se 8-25s-37e, elev 3162 ft, dr 825 ft; Russell-Steele 1, c ne nw 24-20s-33e, elev 3627 ft, sd in salt 3120 ft. Humble's J. L. Coates 1,

c nw ne 10-24s-36e, elev 3383 ft, salt 1314-2947 ft, top brown lime 2996 or 2988 ft, jkd gasser, td 3355 ft, sd for relief well to kill; Coates 1-A, elev 3385 ft, dr 1245 ft; F. M. Saunders 1, c ne ne 4-22s-34e, elev 3641 ft, dr 1550 ft. Maljamar O&G Corp.'s P. Miller 1, c nw sw 23-17s-32e, rust. Nat'l Securities Oil Corp.'s V. Linam 1, nec s½ sw 33-18s-37e, elev 3712 ft, top anhydrite 1580 ft, logged salt 1716-2650 ft, top lime 2956 ft, dr 4330 ft. Repollo Oil Co.-Anderson Prichard Oil Corp.'s B. W. Arnold 1, swc nw se 6-20s-32e, sd 464 ft. Ryan Consolidated Pet. Corp.'s Acree 1, c ne nw 35-20s-32e, elev 3568 ft, dr lime 3150 ft. Shell Pet. Corp.'s State-Endura 1, c se ne 12-21s-35e, elev 3588 ft, top anhydrite 1453 ft, salt 1533 to 2865 ft, top lime 3020 ft, pb from ws at 4404 to 3990 ft and tested 95 percent sulphur water. The Texas Co.'s Anna C. Moore 1, c nw se 21-20s-32e, elev 3508 ft, tested water in lme, probably dry and abd 3019 ft. The Texas Co.-Amerada & Columbian Carbon Co.'s Parker 1, c nw nw 29-26s-37e, dr 1380 ft. W. L. Todd and The Texas Co.'s Fred Cole 1, c ne ne 35-19s-33e, dr 675 ft. Sam K. Vierson & Brown's W. D. Robinson 1, c nw se 14-11s-32e, elev 4355 ft, rig.

CHAVES COUNTY—Warman Oil Trust's Weldon-Hoar 1, nw se 9-14s-25e, Blackdom structure, dr at 1554 ft. Spanish Grants Oil Co.'s Fee 1, cnw nw sw 2-8s-23e, dr water wells.

ROOSEVELT COUNTY—Claudell Development Co.'s Wilmes 1, sw se 21-2s-30e, sd at 3678 ft with so reported in the Gloriette sandstone.

SAN JUAN COUNTY — Continental Oil Co.'s Rattlesnake 42, sw ne nw 12-29n-19w, spd. Phillips & Healy's Test 2, sec 34-30n-11w, dr below 200 ft. Cooperative Producers & Refiners' Test 1, sec 22-29s-9w, spd.

SAN MIGUEL COUNTY—Cabra Springs Oil & Gas Co.'s Pino Mesa 1, sw ne ne 22-12n-22e, dr below 3900 ft after setting 6¼-in csg at 3830 ft. Cabra Springs' West Pino Mesa 2, sw sw sw 31-12n-22e, spd for dep test at 300 ft with machine and will build derrick later.

UNION COUNTY—Sierra Grande Oil Corporation's J. J. Rogers 1, cne sw 4-29n-29e, dr below 1000 ft.

COLORADO

BOULDER COUNTY—Leslie R. Steele et al's Maxwell 1, sw ne nw 24-1n-71w, dr at 265 ft.

HUERFANO COUNTY—S. W. Pressey et al's Ojo 1, sw ne 10-29n-69w, Oak View district, fsg tools at 2550 ft.

LINCOLN COUNTY—Consolidated Smelting & Metals Corporation's Hancock 1, ne nw se 7-17s-52w, dr at 1250 ft.

MONTEZUMA COUNTY—Coon & Teague's (McElmo Oil Co.) West 1, ne nw nw 31-36-17, McElmo district, waiting for new cable with td of 3005 ft.

PARK COUNTY — South Park Oil Co.'s State 1, se se sw 16-11s-17w, Hartsel anticline, udr 10-in csg to set at 875 ft with td of 1225 ft.

PROWERS COUNTY—Trojan Oil & Gas Co.'s Lotus 1, nw ne ne 15-23s-46w, Lamar district, dr at 4868 ft.

WYOMING

BIG HORN COUNTY—Yale Oil Corporation's Blakesley 1, ne ne nw 28-49n-91w, dr at 1100 ft. California Exploration Co.'s Government 1, csw sw 4-54n-94w, dr at 150 ft, set 10-in at 80 ft. Drumheller's Government 1, sw sw ne 17-49n-91w, plug back to 1375 ft from 1460 ft and will test.

CARBON COUNTY—Ohio Oil Company's Sid Morris 1, cne se 6-20n-77w, dr 6797 ft. Ohio Oil Co. and California Co.'s Kyle 1, ne se ne 26-21n-79w, dr at 4736 ft. Argo Oil Co.'s Frank Johnston-Union Pacific 1, ne ne se 5-24n-87w, testing after shooting the Muddy sand at 2829-35 ft. Earl W. Reader, Inc.'s Whitford 1, sw se se 24-20n-84w, waiting on cement around the 10-in at 3584 ft. Reader's Union Pacific 1, csw sw 19-20n-83w, awaiting rotary at 5930 ft.

FREMONT COUNTY—Mid-American Oil Co.'s Government 2, cne sw 14-28n-92w, dr at 1700 ft.

NIOBRARA COUNTY—Shogren & Hultgren's Olinger 1-A, ne nw 1-39n-63w, Old Woman Creek, spd at 150 ft.

WASHAKIE COUNTY—Wyoming Oil & Refining Co.'s Frison 1, nw sw nw 14-48n-91w, Frison Dome, dr at 400 ft.

MONTANA

FERGUS COUNTY—Button Butte Oil & Gas Co.'s Woodward 1, se se sw 20-14n-24e, dr 3016 ft. S. W. Pennock's Nordheim 1, nw ne ne 6-21n-18e, dr at 475 ft.

CHATEAU COUNTY—Mills & Decker's Fee 1, ne nw 29-27n-13e, Little Sandy Dome, Chateau County, mim.

PHILLIPS COUNTY—Guy Norman's Pewitt 1, se nw 20-24n-24e, Guinn dome, dr at 390 ft.

ALABAMA

BALDWIN COUNTY—Danciger O&R Co.'s U. S. Government 1, nw nw 1-9s-1e, (parcel 2, Ft. Morgan reservation, 536-ac), 12½-in csg 200 ft, arr make ds test, td 1535 ft, sand.

COVINGTON COUNTY—Geometer Prod. Co.'s A. B. Culbreth 1, sw sw ne 8-2n-14e, coring 3764 ft.

HOUSTON COUNTY—Rice O&G Co.'s Oakley Est. 1, sw nw sw 9-3n-29e, arr deepen, td 2506 ft.

PIKE COUNTY—Alabama Drlg. Co.'s Faulk 1, nw nw 31-11n-21e, ru and sd.

MISSISSIPPI

ISSAQUENA COUNTY—Pelican Oil & Gasoline Co.'s Martin G. Bender 1, nw nw 11-12n-8w, elev 105 ft, 7-in csg at top gas rock 3079 ft, sd cur titles and adding to block, td 3227 ft.

JONES COUNTY—Snow-Black Pet. Co.'s Fox 1, se se sw 30-7n-12w, spd setting surf csg.

MONROE COUNTY—P. J. McAlpine et al's Crook 1, ne ne 4-13s-18w, elev 413.6 ft, dr 1871 ft, limestone.

MONTGOMERY COUNTY—D. C. Shaffer et al's Fee not given, 31-19-7, lcn.

STONE COUNTY—Gulf Ref. Co.'s Dantzler Lbr. Co. 7, se se 36-3s-11w, spd.

WARREN COUNTY—Harry W. Elliott's R. L. Parker 2, nw nw 14-14n-1e, 6⅝-in csg 820 ft, arr set 4-in csg td 1005 ft.

WINSTON COUNTY—Jack Vale's Moody 1, nw sw 3-13n-14e, elev 540 ft, top Midway chalk 857 ft (corrected depth), claim sg, arr make ds test, td 864 ft, chalk.

ARKANSAS

ARKANSAS COUNTY—Grand Prairie Dev. Co.'s Fischer 1, nw ne nw 6-6s-4e, dr 3100 ft.

ASHLEY COUNTY—J. D. Houseman et al's Bovine Farms 1, ne ne 1-18-8w, rur.

HOT SPRINGS COUNTY—R. E. Morris' & Lang 1, sw sw 19-6s-17w, sd 512 ft, lime.

LA FAYETTE COUNTY—W. H. Harvey's A. M. Allen 2, se sw 18-19-24, sd for fuel 1500 ft. R. F. Allen 1, ne se sw 13-19-25, dk. S. H. Riggs et al's Jas. Dubose 1, se nw 35-15-24, 10-in csg 100 ft, dr 995 ft. Kamon & Neely's Red River Lbr. Co. 1, sw sw 26-19-25, sd 2270 ft.

MILLER COUNTY—King Oil Corp.'s E. G. Anderson 1, nw sw ne 16-14-27, 10-in csg 89 ft, dr 1720 ft. C. H. Schroder 1, sw ne 24-14-28, sd 3160 ft. C. V. Lenz's Dale 6, sw se nw 24-15-26, spd 10-in csg 205 ft. Lee Timberlake's Frost Est. 1, sw sw se 27-15-26, dr 2500 ft.

OUACHITA COUNTY—S. J. Carnes' L. Caldwell 1, nw nw 12-14-19, dr 1250 ft. P. Highsmith 1, nw ne nw spd and sd. Kraft Oil Corp.'s Rath & Cartier 1, sw sw sw 32-13-17, 6-in csg 1420 ft, tested sw 1428 ft, dr 1430 ft. J. D. Reynolds' Bragg 1, sw ne se 25-13-18, 6-in csg 1372 ft, tested sw 1390 ft, sd 1390 ft. T. J. Gaughan et al's J. Humphrey 1, sw ne ne 30-13-17, spd dr 930 ft.

UNION COUNTY—Gulf Ref. Co.'s Werner Lbr. Co. 49, sw nw sw 5-16-16, dr 2000 ft (8000-ft test). H. L. Hunt, Inc.'s E. F. Gregory 15, 10-17-14, dr 5410 ft. Mrs. R. K. Jones' J. Davis 1, nw nw 28-16-14, wosr, td 2758 ft. Joe Modisett et al's D. G. Sturdivant 1, se se 6-18-13, wocs 12½-in csg 190 ft (5000-ft test). Ward 1, se nw 6-18-13, 12½-in csg 150 ft, showed est 10 mil ft gas in ds test, arr set csg to 2560 ft. E. O. Olds' Telford 1, nw nw 35-17-15, setting 6⅝-in csg 2180 ft, td 2200 it. Reuter Oil Co., Inc's Kinard 1, nw se nw 32-18-14, sd repr pumping unit, td 2189 ft. Vines 2, nw sw se 29-18-14, wosr, td 2216 ft.

NORTH LOUISIANA

BIENVILLE PARISH — Saline Drilling Co.'s Pardee 1, ne ne 27-14n-6w, dr 2970 ft shale.

BOSSIER PARISH — Howard & Scott's Sherrill 1, nw sw 13-18n-12w, rur. W. A. Kirklin, Tr.'s, Garrett & McKellar 1, se nw nw 3-21n-13w, dr 500 ft. L. R. Skidmore's Davis 1, se se 12-18n-13w, sd 1150 ft.

CADDO PARISH—Ed Bailey et al's Hartzo 1, ne nw 28-22n-15w, 12½ in csg 90 ft, dr 900 ft. W. T. Bell's Bostick 1, sw sw 12-22n-16w, fsg bailer, td 2750 ft. Texas Trading Co.'s A. T. Curry 1, sw nw 28-19n-16w, set tub with pckr at 940 ft after showing gas, arr test, td 952 ft.

CATAHOULA PARISH—Phillipi et al's La. Cent. Lbr. Co. 1, nw se 2-9n-6e, rur to pb for shallow gas test, td 3016 ft.

CLAIBORNE PARISH—K. C. Bundy's J. K. King 1, 12-21n-7w, dk. J. C. King et al's Odis Webb 1, nw ne 21-21n-8w, elev 265 ft, top Nacatoch 1771 ft, arr sr. E. T. Oakes et al's Patton Est. 1, ne ne 1-20n-5w, rebldg dk damaged by storm, rog.

DE SOTO PARISH—Century Oil & Drilling Corp.'s J. M. Norton 1, sw se 27-11n-14w, elev 244 ft, tested est 4 mil ft gas and show sw, sd 2825 ft. G. O. Collins's J. H. Riggs 1, ne sw 21-14n-13w, spd cemtd 12½ in csg 45 ft. Dempsey & Manziel's Thigpen 1, ne sw ne 33-13n-12w, pumping oil and sw intermittently, wo gauge, td 1745 ft, chalk. P. G. Frailey et al's J. E. Stell 1, 5-12n-16w, dk. Hester et al's Alston 1-A, ne sw 11-11n-16w, 10-in csg 42 ft, dr 130 ft. Ramsey-DeSoto Oil Co.'s J. W. Ramsey 1, se nw 36-11n-11w, sd 210 ft. E. L. Foster et al's Youngblood 1, ne ne 9-11n-14w, sd 1850 ft. J. T. McCormick et al's Harris 1, sw se 11-12n-14w.

EAST CARROLL PARISH—Century Oil & Drilling Corp.'s Olivedell Pltg. Co. 1, 56-21n-12e, sd 170 ft, completing, rur.

NATCHITOCHES PARISH—Clyde Creighton's Friedman Est. 1, swc 52-7n-6w, dr 2930 ft. Edwards & Turner's Prudential Life Ins. Co. 1, nw nw 26-10n-6w, dk. Roy Raines et al's Fee 1, sw sw 28-9n-10w, fsg ds, td 3660 ft. Leslie Prod. Co.'s Tom Moffitt 1, se nw 19-10n-10w, lcn. B. E. Taylor's De Blieux 1, 83-10n-7w, dk.

RAPIDES PARISH—S. J. Taylor's Bentley Lbr. Co. 1, 40-5n-1w, elev 108 ft base Jackson 2175 ft, base Minden 3040 ft, fsg drill pipe, td 4275 ft, Wilcox shale.

SABINE PARISH—M. T. Hines' J. B. Hill 1, sw ne 4-6n-11w, spd cemtd 10-in csg 40 ft. Lawson, Leavell & Bryant's Whitney Corp. 1, 5-9n-13w, tested est 1½ mil ft gas and show sw 3100 ft, arr dd. Whitehurst et al's Logan Oil Co. 1, 3-9n-13w, 6-in csg 1460 ft, top Nacatosh, swabbing with 1500 ft oih, td 1956 ft. Laurel Pet. Co.'s Long Bell Lbr. Co. 1, sw sw 14-8n-14w, dk and rur.

LOUISIANA GULF COAST

ACADIA PARISH—Humble's Rice Milling Co. 1, s of Crowley field, sec 27-10s-2e, dr shale 8597 ft. Woodley Pet. Co.'s Dr. Newman 1, Churchpoint, sec 24-7s-1e, wocs 5010 ft.

BEAUREGARD PARISH—McCormich & Lyner's Long Bell Lbr. Co. 1, w of Ludington, section 26-2s-8w, mir.

AVOYELLES PARISH—Southern Star Pet. Co.'s I. G. Boyette 1, sec 28-3n-5e, sd 3421 ft.

CALCASIEU PARISH—Nichols McCaleb's Gray 1, 3 mi nw of Starks, sec 22-8s-13w, sd 50 ft. Gulf's Stark 1, s of Vinton, sec 26-11s-12w, dr shale 7478 ft. Wheeler Oil Co.'s Gabbert 1, e of Lake Charles, sec 28-9s-7w, circulating 8400 ft. Fred Oil Co.'s Faist 2, 900 ft se of No. 1, section 26-8s-10w, spudded by hand and sd.

CAMERON PARISH—The Texas Co.'s Jes-

sen 1, s of Calcasieu Lake, sec 24-14s-10w, dr shale 8064 ft.

JEFFERSON PARISH — The Texas Co.'s Bayou St. Denis 1, se of Lafitte, sec 19-7s-24e, dr shale no showing 6551 ft. Lincoln Oil Co.'s Rigaud 1, Grand Island, sec 28-21s-25e, dr shale 3560 ft.

JEFFERSON DAVIS PARISH—Strake Oil Co.'s Calcasieu National Bank 1, sw of Woodlawn, sec 12-9s-6w, dr 8097 ft.

PLAQUEMINES PARISH—Southern Sulphur Co.'s State Bay Adams 1, sec 23-20s-28e, sd 1398 ft.

ST. MARTIN PARISH—The Texas Co.'s State Blum Bob 1, ne of Henderson, sec 9-8s-7e, dr 125 ft.

ST. MARY PARISH — Edwards Drilling Co.'s Chetemaches 1, near Charenton, sec 34-13s-9e, coring 6870 ft.

TEXAS GULF COAST

ANGELINA COUNTY—Lee Tex Oil Co.'s A. H. Geisler 1, mile nw of Lay, B. J. Thompson sur, dk. Koch & Duffey's L. W. Alberry 1, near Diboll, J. A. Prado sur, sd 2008 ft. E. B. La Rue's W. D. Ivey 1, near Huntington, Scarbrough sur, sd 1466 ft. Costen & Howard's Penn 1, 8 mi w of Lufkin, J. Watson sur, mir.

BRAZORIA COUNTY—Amerada Pet. Corp.'s Houston Farms Dev. Co. 1, s of Liverpool, L. G. Bachelder sur, cleaning hole. Big Creek Oil Co.'s F. Truska B-1, s of Alvin, H&TC sur No. 7, dr 6001 ft

CHAMBERS COUNTY—Humble's A. Middleton 1, 6 mi e of Anahuac, H&TC sur, sec 58, preparing to dr deeper. South Gulf Oil Corp.'s R. M. White 1, ne of Turtle Bay, Luke Bryan sur, dk. Sun Oil Co.'s Hamilton 1, sw of Seabreeze, T&NO sur, sec 128, dr shale 8889 ft, trace of oil.

FT. BEND COUNTY—Turnbull & Irwin's Hermann Hospital 1, e of Richmond, J. S. Cartwright sur, dr shale 3292 ft.

HARDIN COUNTY—Jack Frazier's Sternenburg 1, nw of Kountz, J. Pearson sur, dk.

HARRIS COUNTY—Red Bluff Oil Co.'s Seureau 1, w of Red Bluff, Wm. R. Harris sur, sd 6029 ft. Cockburn & Frazier's Hermann Hospital 1, e of Addicks, Wm. Hardin sur, dr shale 5654 ft. Hill & Hill's C. R. Wharton 1, w of Fairbanks, W. C. R. R. sur, sec 5, dr shale 4260 ft. W. U. Paul's House 2, 100 ft n of House 1, M. Magruda sur, dr shale 6450 ft. T. S. & F. Oil Co.'s J. B. Hines 1, sw of Lynchburg, A. McCormick sur, woc 3475 ft.

JASPER COUNTY—Republic Prod. Co.'s Sabine Tram Co. 1, ne of Buna, H&TC sur, sec 71, dr shale 1792 ft.

JEFFERSON COUNTY — Sun Oil Co.'s Long 1, sw of Nome, J. Blair sur, pb to 8470 ft to test.

LIBERTY COUNTY—Extension Oil Co.'s J. A. Lovett 1, sw of Hull, P. P. Devers sur, sd 4049 ft. Liberty Independent Oil Co.'s J. M. Neal 1, se of Davis Hill, S. Strong sur, dr shale 3765 ft.

MADISON COUNTY—Madisonville Prod. Co.'s D. C. Cannon 1, nw of Madisonville, J. P. Phillips sur, dk.

MATAGORDA COUNTY — Cockburn Oil Corp.'s Hawkins 6, Sheppards Mott, D. McCarthy sur, td 5803 ft. H. M. Smith's Wadsworth Est. 1, Mad Island prospect, S. R. Fisher sur, lot 3, B-5, dr shale 5605 ft.

MONTGOMERY COUNTY—W. C. Keeble, Tr.'s T. S. Foster 1, e of Esperanza, J. M. De La Garza sur, dr 600 ft.

WALKER COUNTY—Boone Brothers' Tex. L. L. L. Co. 1-C, se of Kittrell field, M. Milsap sur, coring 2040 ft. Dan F. Cameron's Eva Gohlman 1, near Riverside, J. J. Porter sur, dk. S. E. Grey's Clara Weinzell 1, se of Riverside, J. J. Porter sur, sp.

WALLER COUNTY—Smith et al's J. R. Garrett 1, e of Millheim, S. M. Williams sur, dr shale 4415 ft.

WASHINGTON COUNTY—Arkansas Fuel Co.'s A. Witscharke 1, nw of Burton, J. D. Miller sur, dr shale 310 ft.

WHARTON COUNTY — John Deering's Kountz 1, se of Louise, S. A. & M. G. R. R. sur, coring 5501 ft. The Texas Co.'s Pierce Est. 1, se of Pierce, I. & G. N. sur. No. 38, dr sand 3617 ft.

SOUTH TEXAS

BANDERA COUNTY—Plateau Oil Co.'s R. G. Garrison 1, sec 506, GC&SF sur, dr 1865 ft.

BASTROP COUNTY—Marts & Beavens' W. L. Miller 1, 40-ac tr, blk 22, Dennis Dykes sur, lcn. Nelson Puett's J. H. Carroll 3, A. Mays sur, ru.

BEE COUNTY—Diamond Half Oil Co.'s McKinney 1, S. Morris sur, dr 2675 ft. Haines-McMillin Oil Corp., 420 ft nl, 330 ft wl nw¼ sec 14, J. M. Uranga gr, corrected lcn, ru. Humble O&R Co.'s Thompson 2, Garrett Roche sur, dr 4478 ft. Mid-Continent Crude Oil Corp.'s A. J. Kimball 2, S. Winship sur, td 3555 ft, setting 4½ in liner to 3544 feet in sdtr hole, dst 64 jts plo. Mid-Tex Pet. Co.'s Travland 1, J. M. Uranga gr, sand 4495-4501 ft, 2 dst failed, dd. Navarro Oil Co.'s J. E. Roth 1, sec 7, Uranga gr., second well Dirks area, sp. Neversuch Oil Co.'s Mrs. Rosa Borroum 1, Chas. Baker sur, coring 3030 ft. George Pace et al's Goree 1, blk 26, Tarver-Henslee sub, T. B. Barton sur, coring sand 3464 ft. Worth Oil Co.'s Rutledge 1-A, B. Q. Hadley sur, dr 1700 ft. Wrightsman Oil Co.'s A. J. Kimball 1, S. Winship sur, dr 450 ft.

BEXAR COUNTY—Campbell et al's Margaret Cantu 1, J. M. Arocha gr, sand 1464½-70 ft, td 1470 ft. washing in. C. A. Ingersoll et al's Louis Mann 1, 180 ft sl, 1000 ft el 60-ac tr in Christopher sur, 3 mi s Von Ormy, sp and sd. Chas. N. Jones & R. J. Keiffer's LaGrange 1, F. Rolen sur, td 586 ft, wait on pump to dd. C. J. LeCompte's Mayfield Park 1, 300 ft sl and 150 ft el of 100-ac tr in Mayfield Park addn, just s San Antonio, no rept. McPhee & Brigg's Florence Lamb 1, M. de Luna sur No. 2, td 1065 ft, prep to dd. Noble & Aiken's R. W. Devilbiss 1, Martinez sur, td 2230 ft, top Austin chalk 222 ft, sandy lime section starting 2014 ft, show little o&g, sd for csg. George O'Neill et al's Holly Crouch 1, M. Gotari sur No. 5, sec 4, td 1395 ft, showing little o&g, prep to se csg. Richcul Oil Co.'s Kohler 1, J. M. Baerrera sur, td 1370 ft, to dd with spudder.

CALDWELL COUNTY—H. H. Coffield's C. C. Franks 1, 870 ft sl, 150 ft el of 171-ac tr, Edward Brown sur, 3 mi s Buchanan pool, lcn for 3200-foot test. Reedy et al's T. North 1, A. Floyd sur, test o&sw 2485 ft, sd. R. Y. Walker's J. M. Pierce 1-B, S. Seal sur, completing 2539 ft.

CALHOUN COUNTY — Continental Oil Co.'s Am. Nat'l Realty Co. 2, c ne ne sec 6, blk C, 9 mi s Seadrift, or 660 ft nl and el of set, 850 ft ne No. 1, lcn. Steinberger Pet. Corp.'s Shofner 1, A. Esparza sur, dr 3795 ft.

De WITT COUNTY—Stewart & Egan's R. Kleberg 1, J. J. Tumlinson sur, 2 mi nw Cuero, prep to dd from 20 ft, dk up, well spudded, wait on rig. S. S. Price et al's W. W. Buehrig 1, sec 7, T&NO Ry. sur, mim.

DUVAL COUNTY—J. M. Anderson's Philp 1, sec 320, test dry 1750 ft in Cole sand. Mills Bennett's W. R. Peters 1, ne sec 178, sd 2153 ft. Conway & Buescher's A. H. Hoffman 2, sec 116, lcn. Frank Gravis' C. W. Hahl 1, sec 64, dr 1725 ft. Harvey & Henderson's Chernoskey 1, 330 ft sl, 660 ft wl, sec 226, sp. Intrepid Oil Co.'s Parr Ranch 1, sec 26, sd 4856 ft for orders; plans second test on block. W. L. Pearson et al's Fitzsimmons 1, sec 291, fsh below 4545 ft.

EDWARDS COUNTY—All wells shut down.

FRIO COUNTY — Shoemaker et al's M. Roach Est. 1, C. Wentzel sur No. 139, td 2371 ft, bailed down, remeasured dr stem and found 37 ft error, dr in again.

GILLESPIE COUNTY—Well shut down.

GONZALES COUNTY—Southwestern Dev. Synd., Ltd.'s W. S. Atkinson 1, S. Y. Reims sur, dr 2170 ft, elev 384 ft, top Carrizo 1095 ft, top Wilcox 1284 ft.

GUADALUPE COUNTY—C. W. DeFreest et al's Henry L. Beck 1, 150 ft nl, 650 ft wl 109.43-ac tr, G. Malpaz sur, 1 mi ne Schertz, dr 400 ft. Grayburg Oil Co.'s McKean 13, Cottle sur, td 1755 ft, cement csg, wocs. Suttle et al's Baenzinger 1, 700 ft sl, 500 ft el 125-ac tr, A. O. Manchola sur, reinstatement, td 2155 ft, to pb to abt 1900 ft, set csg 1784 ft and treat with acid, top Austin chalk 1784 ft. A. D. Locke's N. S. Lowman 1, Cyrus Campbell League, dr 900 ft. Siedeman's Fee 2, Esnaurrizar sur, dr 1350 ft, top Edwards lime 633 ft.

HIDALGO COUNTY—D. D. Oil Co.'s Brock & Showers 1, lot 8, blk 9, Vista Hermosa sub, Por 80, td 3058 ft, coring 2810 ft in sdtr hole. DMC Oil Co.'s Daskam 1, blk 43, Por 45, dr 2910 ft. Nutex Oil Co.'s Frank Rabb 1, Laguna Seca sur, td 125 ft, ru to re-dr. E. A. Showers et al's Brock & Showers 1, lot 11, blk 18, Por 79, sd 208 ft for water, dr water well. Union Sulphur Co.'s Am. Rio Grande Land & Irr. Co. 3, lot 2082, blk 86, N. Capisallo dist, Llano Grande gr, dr 6366 ft.

JACKSON COUNTY — Shell Pet. Corp.'s McCrory 1, lcn not definite, dr 1200 ft.

JIM HOGG COUNTY—Magnolia Pet. Co.'s Martinez 36-A, dr 3325 ft, sand 3280-85 ft, test sw. Miller et al's Yeager 1, blk 6, sur 20, dr 1765 ft. Sun Oil Co.'s Elizabeth East 1, blk 126, Santa Domingo gr, dr 3236 ft, sandy shale.

JIM WELLS COUNTY—O. W. Killam's W. D. Wade 4, blk D, S. A. Agua Dulce sur, dr 4275 ft, sand 4167-76 ft, dst 4160-76 ft, show 8 jts oily mud, 4 jts sw, 10 lbs pressure 15 min. Jim Lundin's T. C. Hewitt 1, sec 51, R. P. Haldeman sur, ru. Magnolia Pet. Co.'s A. A. Seeligson 6, V. Canale sur No. 218, Premont, sd 1710 ft, last rept. Smith & Storey's Schaeffer 1, S. Bigham sur, dr. Sinclair Prairie O&G Co.'s A. A. Seeligson —, sec 71, SK&K sur No. 215, td 3900 ft, pb 3200 ft, woc.

KARNES COUNTY—American Liberty Oil Co.'s Belknap 2, 3000 ft nwl, 833 ft nel of Chas. Haynes sur, e Burnell field, lcn. Herman Brown et al's Edmonia Timberg, 330 ft nel, 990 ft sel 177-ac tr, James Johnson sur, correct lcn, sp. H. A. Pagenkopf's McAda 1, 330 ft nel and nwl of tr in Carlos Martinez sur, 3 mi sw Kenedy, dk. R. G. Tonkin's Miss Olive Henke 1, Seguin Grant, td 2810 ft, pb 2200 ft, set 6⅝ in csg 2146 ft, dr out plugs.

KERR COUNTY—Jeff Love & Eastland Oil Co.'s Jeff Love 5-E, J. Martinez sur, dr 3995 ft. Meteor Oil Corp.'s C. O. Whitworth 1, HE&WT sur No. 1439, temp. sd 940 ft.

LEE COUNTY—James E. Pederson's C. A. Turner 1, D. Hudson sur, td 6560 ft, pb 6060 ft with 145 sacks cement, co to test sand section 6030-60 ft.

LIVE OAK COUNTY—Baugh & McMillan's Walton & Campbell 1, D. R. Fant sur, dr 2725 ft. Brunson et al's Nichols 1, Ayers sur, sd 1275 ft. The California Co.'s G. Blankenship 1, sec 508, A. A. Dunn sur, dr 4138 ft, to dr to Cook Mountain. Henderson Coquat's H. E. Rex 1, GH&H sur, dr 1050 ft. L. McCoy et al's D. E. Bomar 1, in 25-ac tr in John Hefferman sur, ru. Smith & Storey's Frederick 1, Jane Curry sur, dr 4200 ft.

McMULLEN COUNTY—Howard & Claunch's Claunch 4, M. Hely sur, set csg on 750-foot sand, woc. Points et al's Fahler 1, Pittuck sur, sd 592 ft. Texas Pet. Co.'s H. F. G. Wulf 1, 1000 ft nl, 200 ft el of 480-ac tr, Two Rivers Ranch sub, 9 mi w Calliham, sp. Hy Williams' W. L. Cox 8, James Garner sur, dr below 950 ft. Witherspoon Oil Co.'s H. L. Lark 1, blk 110, Lark sub, E. W. B. Scrugham sur, td 1027 ft, sand 1021-26 ft, set 6⅝ in csg 1018 ft, well sprayed considerable oil and show little gas volume through 1 in ch on csg, but would not clean self, run tubing to swab through tubing, looks like about 20 bbl well, opens new sand in Calliham field.

MEDINA COUNTY—Lynd-Hepler's Mary Ann Jungman 1, 1500 ft sl, 150 ft el of 120-ac lease, N. B. Rogers sur No. 33, 150 ft w road, ru 1500 ft test.

MILAM COUNTY—C. F. Drake et al's Standard Coal Co. 1, G. L. Johnson sur, td 1569 ft, ru to dd. Minscript Mfg. Co.'s Mrs. C. Dymke 1, W. Allen sur, dr 450 ft. Second National Oil Co.'s B. P. Ward 2, L. Taylor sur, sp.

NUECES COUNTY—Magnolia Pet. Co.'s S. Page 1, Kinney sur No. 586, sec 8, testing 4573 ft.

REFUGIO COUNTY—Magnolia Pet. Co.'s Mattie Wood 1, S. Turner sur, dr 1400 ft. Quintana Pet. Co.'s Tom O'Connor 2-B, td 8757 ft, ran electric formation testing device.

SAN PATRICIO COUNTY — Heep Oil Corp.'s Welder 1-B, Portillo sur, dr 5920 ft. Humble O&R Co.'s Welder 1, lot 4, A&O sub of Villareal gr, dr 5635 ft. Plymouth Oil Co.'s E. H. Welder 2-B, M. Musquiz sur, td 6854 ft, set csg 5386 ft in sdtr hole, woc; Welder 1-C, sec 49, re-sub of Welder ranch, sp. Stan-

olind O&G Co.'s J. J. McMillan 1, Fulton Pasture sub, P. Fitzsimmons sur, lot 12, td 4018 ft, dr 3925 ft in sdtr hole.

STARR COUNTY—C. R. Borah et al's A. Guerra 1, sh 6, San Jose gr, dr 2750 ft. John H. Clopton's Roos et al 1, Por 92, fsh 4334 ft; D. L. Tijernia 1, blk 14, sh 14-c, Por 80, dr 950 ft. Conroe Drlg. Co.'s Guerra 1, blk 35, J. N. Crawford sub, Por 56, fsh 2370 ft. Conway & Emanuel's Starr County Cattle Co. 1, blk 57, JL sub, Por 89, sand 2705-11 ft, dst 20 thribbles mud and water, trace o&g, set 4½ in csg, wocs. Crawford et al's Hicks & Phelps 1, Pedernal gr, sd 1615 ft. H. L. Curry's Kelsey Bass 1, sur 8, Por 75-77, set csg 1187 ft, wocs. Goodwin et al's N. Pena 1, sh 80, Por 81, dr 1125 ft. W. F. Lacy et al's G. M. Abney 1, 330 ft wl Por 99 and approx 4800 ft s State Highway 4, ne cor 30-ac lease, 1 mi nw Samfordyce field, dk. Lester & Duffield, Inc., R. H. Vice et al's E. B. Carruth 1, td 4016 ft, pb and sd tr, gas sand 2882-91 ft, oil sand 2891-2903 ft, wait on csg. Marren, Johnson & Bond's Starr County Cattle Co. 4, blk 24, JL sub of Por 89, sand 2730-41 ft, dst show little gas, lots of mud when seat gave away. Mitchell et al's R. G. Salinas 1, sh 39, Por 80, dr 750 ft. Dale Sneed's Guerra 1, sh 92, Por 68, sd 295 ft. Texas Inv. & Royalty Co.'s Mrs. S. Welch 1, 390 ft swl, 2000 ft sel of 1107-ac tr in Pedernal gr, dk. E. B. Van Huss et al's Garcia Land & Cottle Co. 1, Por 100, sand 2785½-90 ft, coring ahead.

TRAVIS COUNTY—C. A. Stuffs et al's Julius Kerlin 1, I. Lindsay sur No. 61, dr 1150 ft.

VICTORIA COUNTY—Humble O&R Co.'s Mrs. M. M. Marberry 1, on 93-ac tr 3 mi s McFaddin townsite, dk. Moore & Ahern's Handerson & Pickering 1, W. Rupley sur, dk.

WEBB COUNTY—Foster Barnsley's Webster 6, ne sw sec 685, test little oil 3053 ft, est 3 to 5 BPD. Carolina-Texas O&G Trust's Benavides 11, ne sec 683, dr 3700 ft. O. W. Killam's A. M. Bruni 1-A, blk 55, Albercas gr, td 2352 ft, test sw, pb 2158 ft, set csg, to perf above this level. Frank Millin's A. M. Bruni Est. 1, se sec 7, dr 2319 ft.

WILLACY COUNTY—South Texas Dev. Co.'s F. Armendiez 1, sh 4, dr 3860 ft.

WILLIAMSON COUNTY—Gault & Mims' H. V. Seggern 1, 845 ft swl, 150 ft sel of 50-ac lease out of 99-ac tr in John Bevil sur No. 56, sp. H. F. Goff et al's Timmerman 1, 963 ft n of creek and 1700 ft el of 545-ac tr in H. Cartwright sur, lcn. Helvetia Oil Co.'s O. R. Spreckels 1, in 78-ac tr, T. V. Strode sur, near Copeland, dr 525 ft.

ZAPATA COUNTY—Danvers & Harrison's McAskill 1, 660 ft sel and swl of blk 51, Edwards sub of McAskill Ranch, Borrego gr, sp and sd; N. J. Vela 1, blk 7, Vela sub, Por 29, td 2256 ft, move in heavier rig. O. W. Killam's A. M. Bruni 2, Varrocito Pasture, Borrego gr, dr 1800 ft. Nordan & Morris' C. Vela 1, blk 6, Replat Por 20, td abt 2320 ft, top sand 2055 ft, set csg, wocs. Joe Palmer's J. M. G. Martinez 1, blk 27, sec 434, dr 1250 ft. Venture Pet. Co.'s Ildenfonso Ramirez 1, blk 1, re-plat Por 18, sand 2084-2304 ft, shale and shells 2304-34 ft, sand 2334-56 ft, td 2356 ft, set csg abt 2190 ft, wocs.

EAST TEXAS

ANDERSON COUNTY—Gulf Prod. Co.'s Mary J. Ross 1 (54.7-ac), Robt. Erwin sur, Camp Hill area, elev 484 ft, so 478-552 ft, Pecan chalk 3766-3970 ft, Austin 4509-4696 ft, so&g in top Eagleford shale, coring 4735 ft. Gulf & Humble's O. G. Rogers 1 (267-ac), Daniel Parker sur, 5 mi sw of Elkhart, rig. J. W. Luttes et al's C. M. McKee 1 (100-ac), Walter F. Pool sur, 3 mi se of Frankston, dk. Tide Water and Texas Seaboard's N. N. Wills 21-A, Cayuga field Trinity test, dr 5175 ft. Joe A. Worsham et al's W. F. Wathen 1 (80-ac), B. Towles sur, nw of Cayuga field, sp.

BOWIE COUNTY—Tex-Ark Oil Co.'s J. B. Hamilton 1 (40-ac), Jessie Milam sur, elev 272 ft, dr 230 ft.

CASS COUNTY—A. D. King, Tr. and E. S. White's G. W. Allday 1 (40-ac), R. F. Whittaker sur, 4 mi ne of Linden, elev 288 ft, dk.

CHEROKEE COUNTY—Ponta Oil Co.'s C. W. Darley 1 (35-ac), Cyrus Parks sur, 2¼ mi s of Summerfield, mim. Jacksonville O&G Corp.'s H. D. Henderson 1 (40-ac), J. Pineda sur, elev 409 ft, sd 693 ft. Killough et al's J. S. Strickland 1 (40-ac), Urian Moore sur, 7 mi nw of Jacksonville, elev 433 ft, sd 3505 ft. T. J. Wood & Young's New Birmingham 3, Rusk pool, Levi Jordan sur, rog. E. M. Thomason & Co.'s W. J. Addis 1 (80-ac), Jessie T. Jones sur, elev 471 ft, top Pecan chalk (soft) 3951 ft and hard 4020 ft, dr 4225 ft.

FREESTONE COUNTY — Amerada Pet. Corp.'s H. Berk 1 (1057-ac), E. G. Rector sur, Cayuga area, elev 255 ft, Pecan chalk 2180-2405 ft, Austin chalk 3175-3534 ft, top Woodbine section 3832 ft, cored os 4019-4025 ft, cem 7-in cas 4019 ft. J. A. Hoover and R. J. Bain's W. W. McFall 1 (65-ac), S. Garrison sur, lcn. Simms Oil Co.-Clark & Cowden's W. H. Goolsby 1 (50-ac), J. A. McAnulty sur, 4 mi e of Teague, dr 560 ft.

GREGG COUNTY—O. T. Clark et al's T. G. Williams 1 (100-ac), David Hill sur, 3 mi ne of Longview, elev 426 ft, Pecan chalk 2391-2985 ft, top Austin chalk 3447 ft, sd 3620 ft.

HENDERSON COUNTY—Great State Oil Corp.'s R. Sid Ansley 1-A, N. B. Thompson sur, elev 268 ft, sd 895 ft. Pioneer Exploration Co.'s Mrs. Anne Gentry 1, C. M. Walters sur, 3 mi w of Athens, elev 382 ft, Pecan chalk 2393-2556 ft, Austin chalk 3396-3804 ft, top Woodbine 4197 ft, dry and abd in sw sand 4254 ft. Taubert & McKee (was Crosby & Culp's) M. T. Dodd 1 (160-ac), Geo. Aldrich sur, 4 mi e of Malakoff, elev 376 ft, Pecan chalk 2390-2504 ft, Austin chalk 3456-3610 ft, tested sw 4049 ft.

HILL COUNTY—Humble's M. Holderman 1 (80.7-ac), C. Sullivant sur, 1 mi w of Mount Calm, elev 659 ft, Austin chalk 685-1015 ft, dr 1260 ft.

HOPKINS COUNTY—D. A. Hale et al's L. N. Hall 1 (70-ac), A. Caro sur A-143, elev 506 ft, sd 1492 ft.

HUNT COUNTY—D. T. Cauble et al's Y. B. Reed 1 (220-ac), F. Thweatt & C. B. Payne sur A-1054, 3 mi se of Greenville, top Gober chalk 1400 ft, base Austin chalk 2088 ft, top Woodbine sand 2809 ft, top Red Beds 2874 ft, dr 2925 ft. H. G. Samson and Shawver et al's J. R. Phillips 1 (53 1/3-ac), W. L. James sur, elev 522 ft, top Gober chalk 550 ft, top Austin chalk 1113 ft, sd 1350 ft.

KAUFMAN COUNTY—G. H. Germany et al's D. Clark-W. S. Kirby 1, S. Edens sur, sd 1728 ft. L. P. Kean et al's J. B. Hunter 1, R. Sowell sur, 4 mi s of Terrell, elev 453 ft, top Austin chalk 1785 ft, coring 3030 ft. Murray and Emerson's G. W. Martin 1 (100-ac), W. F. C. Butler sur, 2 mi ne of Kemp, sp and sd.

LIMESTONE COUNTY—C. F. Carter et al's S. F. Dean 1 (75-ac), Pedro Varella sur, 3½ mi sw of Mexia, fsh 1717 ft. David J. Crawford et al's Vol DeLong 1 (59.3-ac), Pedro Varella sur, 2½ mi n of Thelma, sd 2807 ft. Dan H. Daugherty et al's Sallie Welch 1 (94-ac), Pedro Varella sur, top Nacatoch sand 834 ft, top chalk 2350 ft, sd 2500 ft. J. Edward Mills et al's J. B. Hunt 1 (34¼-ac), Isreal Woods sur, 3 mi ne of Kosse, Pecan chalk 2010-2137 ft, top Austin chalk 2780-3158 ft, top Woodbine 3578 ft, cored saturated sand with shale 3637 ft, sd for dst.

MORRIS COUNTY—C. M. "Dad" Joiner et al's Reese 1, T. C. Ry. sur, top Pecan chalk 2020 ft, sd 3540 ft. Watson et al's P. M. Staggers 1, J. D. Nelson sur, co 4259 ft. Maraydun O&G Co.'s T. C. Conner 1 (1000-ac), M. W. Mathews sur, sp.

McLENNAN COUNTY — Humble's Otto Heitmueller 1, J. N. Smith sur, 2 mi se of West, elev 552 ft, Austin chalk 22 to 303 ft, dr 550 ft.

NAVARRO COUNTY—W. J. Keeling Estate & Peyton Bros.' J. F. Rushing 1 (84-ac), Henry Ford sur, 6 mi w of Currie, elev 530 ft, Austin chalk 2155-2395 ft, top Woodbine 2858 ft, sd 2880 ft. Wm. C. McGlothlin et al's M. A. Dobbins 1 (138-ac), E. Lowry sur A-476, 2 mi n of Corsicana, elev 440 ft, top soft Austin chalk 1244 ft, top hard chalk 1295 ft, dr 1300 ft. McGlothlin & McCarter's H. A. Barnett 1 (355-ac), Elisha Powers sur, se part of county, elev 345 ft, Pecan chalk 1900-2020 ft, top Gober chalk 2525 ft, Austin chalk 2815-3100 ft, broken chalk to 3175 ft, coring ws 3610 ft. Wiggins et al's D. A. Donoho 1 (63½-ac), John Cauple sur, 2 mi sw of Corsicana, dr 630 ft.

RED RIVER COUNTY—J. E. Dinger Oil Co.'s W. T. Norris 1 (351-ac), Joseph Guest sur, 1 mi s of Detroit, dr 1265 ft.

ROBERTSON COUNTY — H. L. Patton Co.'s W. H. & H. A. Ely 1 (616-ac), Antonio Manchaco sur, 5 mi se of Hearne, rig.

RUSK COUNTY—Clark et al's J. T. Irwin-Hapgood 1, Geo. May sur, 5 mi ne of New Salem, lcn. Ben E. Lamb et al's Haywood Leath 1 (185-ac), L. J. Dooley sur, 2½ mi e of Pirtle, elev 370 ft, Pecan chalk 2418-2793 ft, Austin chalk 3352-3512 ft, sd to test 3820 ft.

SMITH COUNTY—W. L. Cloud and A. G. Deck's Dora Kendall 1, John Williams sur, 3 mi e of Van field, dr 1345 ft. Dr. Garland et al's J. W. Bartlett 1, R. G. Stewart sur A-955, 1 mi se Jamestown, sp and sd. W. R. Harrison et al's W. P. Rushing 1, Jacob Herrin sur, 1½ mi se Whitehouse, elev 393 ft, pb from 4673 to 4330 ft and tested sw.

TITUS COUNTY—Steve Rotunda et al's O. C. Lillianstern 1 (40-ac), W. H. Crawford sur, 5 mi se of Talco, dk.

UPSHUR COUNTY—G. W. Berry et al's D. M. Hollins 1, B. Asher sur, lcn. Russell Tarr et al's J. C. Hall 1 (180-ac), Wm. McFadden sur, 1½ mi nw Kelsey, lcn.

VAN ZANDT COUNTY—J. C. Acree et al's F. W. Anderson 1 (160-ac), John Blair sur, 4 mi n of Wills Point, sd 2065 ft. J. Beren et al's J. R. Bryant 1 (54.44-ac), NCSL sur, sd 1325 ft; Palmer 2, testing sand 1317-24 ft. A. J. Delcambre et al's A. Crim 2 (48-ac), sd 1370 ft. S. E. Miller et al's J. M. Palmer 1 (39.1-ac), blk 14, NCSL sur, swab 15 bbls 1188 ft. S. L. Olson, Tr. and Jensen-Olson Oil Co.'s J. D. Listenbee 2 (46-ac), Wm. Daniel sur, testing sand 1222-36 ft

WOOD COUNTY—R. M. Coleman et al's J. J. Junior 1 (59-ac), Jas. M. Moore sur, 7 mi sw Winnsboro, lcn.

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Pump Drops and Seats

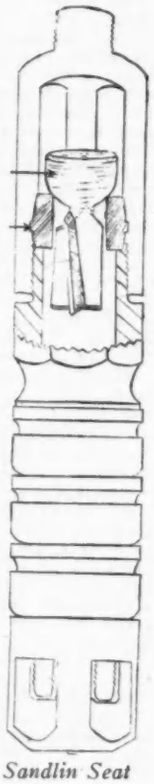
J. W. SANDLIN

J. W. Sandlin, Humble, Texas, is offering a patented rotating, seal-seating and self-guiding drop for standard pumping equipment, which the designer and manufacturer claims offers several advantages over conventional drops. This new type drop will fit any A.P.I. equipment, except that a short cage or crown must be used, so that the ball will not have more than a one-inch lift.

With each pulsation of the pump, the oil when passing through the seat strikes the three twisted blades or fins, which are constructed so that they are positive in action. Their constant rotation keeps them clean and also keeps a well-ground seat under all producing conditions, the manufacturer claims.

The drops are arranged so that they guide straight back through the valve seat. Increased cup life is claimed for installations having this type of drop.

The drop, as used in connection with the Sandlin seat, rides the fluid back to seating position, giving a cushioning effect to the action, the manufacturer claims.



Sandlin Seat

Vertical Welder

HARNISCHFEGER CORPORATION

The Harnischfeger Corporation, Milwaukee, has announced the new P&H-Hansen 50-ampere vertical welder, in answer to the need for a low current arc welder capable of handling the lighter gauge metals used in auto bodies, etc. The outstanding feature of this new welder, known as the W50-254, is the extremely stable high speed arc which enables it to weld quickly and efficiently down to 26-gauge steels. No external reactors, resistors or separate stabilizers are used, the self-stabilized arc being achieved through use of an exclusive internal stabilizer winding.

Welding Electrode

THE LINCOLN ELECTRIC COMPANY

The Lincoln Electric Company, Cleveland, Ohio, has announced a new hard surfacing electrode which is designed for building up straight carbon steel, low alloy or high manganese steel surfaces to resist abrasion. The new electrode, known as "Abrasoweld," will be found useful in such applications as restoring teeth, lips and bottoms of power shovels, lugs and treads of tractors, housings and impellers of centrifugal sand pumps, gear and pinion teeth, and other equipment.

The electrode provides a deposit of abrasion-resisting alloy of the self-hardening type, such a surface hardening very

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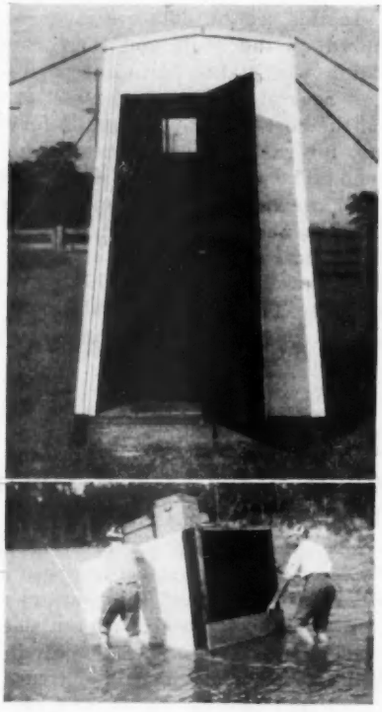
rapidly under conditions of impact and abrasion. Weld metal produced by this new electrode must be ground to shape, as it cannot be filed or machined. The deposit is more resistant to corrosion than high manganese steel, and can be forged hot without materially altering its physical properties.

Torsion Balance Hut

KOENIG IRON WORKS

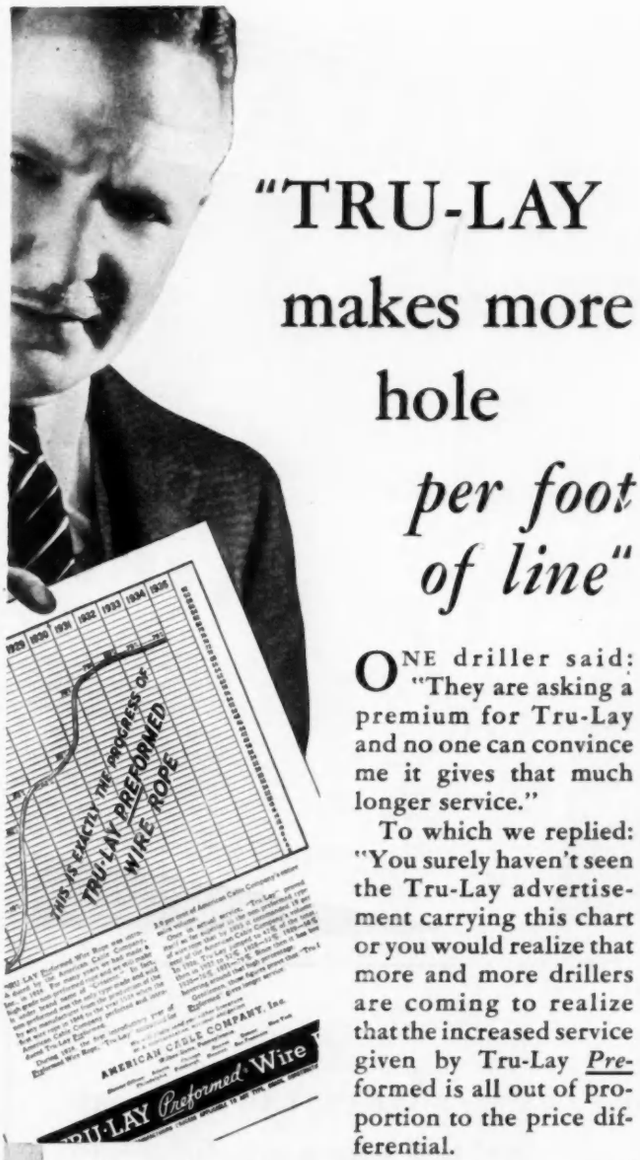
Koenig Iron Works, 2214 Washington Avenue, Houston, has designed a torsion balance hut for protecting the performance of the instruments against outside interference, particularly irregular temperatures. The structure is light-proof.



The hut is four feet square and 7½ feet high. It is portable and requires only a few minutes for complete erection. Framework is one inch thick of white pine, and is lined inside with one-inch cork for insulation. Turnbuckles hold the individually made sections rigidly in place. Exposed walls and roof are treated with boiled linseed oil, and two grades of enamel. The two-foot by six-foot door and 12-inch by 12-inch window are air and light proof.

Bureau of Mines Equipment Study of Oklahoma City Field

Recognizing an exceptional opportunity to study the performance of new equipment and the efficacy of improved drilling and production methods, the U. S. Bureau of Mines, Department of Interior, assigned a petroleum engineer to the problem in the Oklahoma City oil and gas field during its earlier period of development. The results of that study,



"TRU-LAY makes more hole *per foot of line*"

ONE driller said: "They are asking a premium for Tru-Lay and no one can convince me it gives that much longer service."

To which we replied: "You surely haven't seen the Tru-Lay advertisement carrying this chart or you would realize that more and more drillers are coming to realize that the increased service given by Tru-Lay *Pre*formed is all out of proportion to the price differential.

"This chart shows exactly the progress of Tru-Lay *Pre*formed since its introduction in 1924—how Tru-Lay has gradually absorbed an ever increasing percentage of American Cable Company's plant production. That chart in itself indicates buyer acceptance.

"Tru-Lay Rotary Lines are *pre*formed. *Pre*forming eliminates all the internal stress characteristic of *non*-preformed lines: with the result that Tru-Lay gives you more hole per foot of line than any other brand. The chart in this 'ad' proves that Tru-Lay *Pre*formed Rotary Lines must be the cheapest in the long run."

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Everything BULLARD in Safety

BULLARD

Bullard Hose Mask on man repairing gas main. Note breadth of vision; comfort of head bands. Hose goes along bottom of pit. Write for catalog.

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CLEVELAND Safety Clothing Co. - 3804 Payne Ave.
BRAINTREE, MASS. Direct Sales Co., 109 President Road

SOUTH CHATTANOOGA, TENN. C. D. Genter Company, Chattanooga Bank Building

MID-WEST DETROIT C. H. Dickson Company - 2985 East Grand Boulevard
CHICAGO E. D. Bullard Company - 215 South Leavitt Street
GREEN BAY, WIS. Safety Service Company - 109 No. Quincy Street
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continuing throughout the intensive drilling campaign, have just been published as Technical Paper 561, "Mechanical Equipment Used in the Drilling and Production of Oil and Gas Wells in the Oklahoma City Field," by Gustav Wade.

The paper presents the results of a study devoted chiefly to new equipment that has been developed to meet the requirements of drilling and producing operations in the Oklahoma City field and that has been accepted by drilling contractors and operators. The Oklahoma City field was the first large field in which all the oil wells were over one mile deep. The average depth was 6500 feet below the surface and initial formation pressures were about 2600 pounds per square inch, which is much above the usual pressure in other fields. Accordingly, the development of this field called for mechanical ingenuity and the evolution of new devices in order to drill the wells quickly, at reasonable cost, and with due regard for safety of life and property.

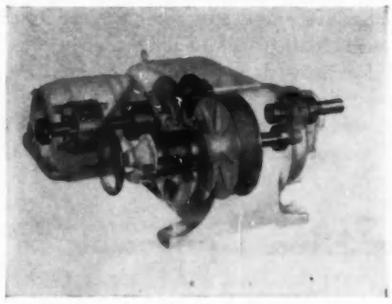
The first part of Technical Paper 561 deals with drilling equipment and practices and includes also such performance data on the drilling equipment as were available at the time of preparing the report. The second part is devoted to a description of the surface equipment used at the wells and on leases for production operations and maintenance of the wells. In this section data are given which pertain to items required on the wells and their costs from the time the location was staked until the well reached the pumping stage. Several tables give the cost of rotary drilling outfits and the cost of equipping wells for natural flow through casing, for gas lift, for pumping, and the cost of lease equipment. The tabulated cost figures are based on 1930 prices and were obtained from the best possible sources and are thought to be reliable.

Copies of Technical Paper 561, "Mechanical Equipment used in Drilling and Production of Oil and Gas Wells in the Oklahoma City Field," are available for distribution only by the Superintendent of Documents, Washington, D. C., price 10 cents.

Electric Motor

U. S. ELECTRICAL MANUFACTURING COMPANY

U. S. Electrical Manufacturing Company has announced an improved development in variable speed for use in the oil industry. A new lever arm construction has been developed for the larger horsepower ratings of the company's "Varidrive" motor to make one unit of the constant speed motor, a variable speed device, and the gear case. The improved design saves space and eliminates mounting bases and transmissions, such as couplings, fans, and belts between component parts.



Varidrive Speed Reducer

The speed change is obtained by the micro-speed control which varies the effective driving diameter of the "Varidiscs." These discs expand and contract for higher and lower speeds, transmitting power through the "Varibelt" to the take-off shaft.

Squeaks *from the* BULL WHEEL

It has remained for the Murray, Kentucky, Ledger & Times to cover the famous quintuplet story in the fewest number of words:

"Another five-year plan gone wrong!"

A school teacher asked the pupils to write a short essay and to choose their own subjects.

A little girl sent in the following paper:

"My subjek is 'Ants.' Ants is of two kinds, insects and lady uncles.

"Sometimes they live in holes and sometimes they crawl into sugar boles, and sometimes they live in with their married sisters."

"So you deceived your husband," said the judge gravely.

"On the contrary, your honor, he deceived me. He said he was going out of town, and he didn't go."

"Here's a bottle of hair tonic for your Christmas, dear."

"That's very thoughtful of you darling."

"Yes. I want you to give it to your stenographer at the office. Her hair is coming out rather badly on your coat."

"My boy friend certainly has cold feet."

"Shame on you, young lady, in my day we didn't find those things out until after we were married."

"With all due deference, my boy, I really think our English custom at the telephone is better than saying 'Hello!' as you do."

"What do you say in England?"

"We say: 'Are you there?' Then, of course, if you are not there, there is no use in going on with the conversation."

"Good morning, Mrs. Kelly," said the doctor, "did you take your husband's temperature, as I told you?"

"Yes, doctor, I borrowed a barometer and placed it on his chest; it said 'very dry' so I bought him a pint o' beer and he's gone back to work."

"Don't you approve of tight skirts?"

"No, I think women should let liquor alone."

The new farm hand was awakened at 4 a.m. by the farmer, who announced that they were going to cut oats.

"Are they wild oats?"

"No. Why?"

"Then why do you have to speak up on them in the dark?"

"Clarence," she called, "I am not accustomed to call my chauffeurs by their first name. What is your surname?"

"Darling, Madam."

"Drive on, Clarence!"

A fellow has to be a contortionist to get by these days. First he has to keep his back to the wall and his ear to the ground. Then he must put his shoulder to the wheel, his nose to the grindstone, keep a level head and have both feet on the ground.

Old Farmer Scrooge wasn't stingy. He was merely economical in the management of his big farm and all his hired hands. One morning while repairing the curb to his underground cistern he very unexpectedly fell in, pulling the rope in with him as he went down. Having always been a good swimmer, he had no trouble in keeping afloat; but the water was cold and he couldn't climb out. His wife was helpless alone, and without a rope.

"John!" she yelled excitedly down to him, "I'll ring the dinner bell so's the boys can come in and pull you out."

"What time is it?" he yelled.

"Bout 11 o'clock."

"No, dang it, let 'em work on till dinner time. I'll just swim around till they come.

BARGAIN

SIX BESSEMER AIR COMPRESSORS

Type 8, Sixty H.P. (13½"x20"), Direct Gas Driven, equipped with following compression cylinders:

3 compressors 12½" x 20",
1 compressor 14" x 20",
2 compressors 6¼" x 20",

Extra Compression Cylinders:
2—6¼"x20", 1—12½"x20".

Located El Dorado Field, Arkansas.

Write P. A. H.,
1104 Union Bank Building,
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OIL and WATER
STEAM and SCALE

In the producing and refining of oil, water is an essential factor. Good steam, and efficient boilers are required—but *Boiler Scale* is the interloper.

Boiler scale must be controlled. And the most simple . . . most natural . . . safest and surest method is *"The Sand-Banum Way"!* Sand-Banum will eliminate the boiler scale hazard from your plant.

Sand-Banum's action is not "chemical"—it contains none of the usual "boiler chemicals", is ABSOLUTELY HARMLESS TO ALL EQUIPMENT, makes "water analyses" unnecessary and prevents costly "shut-downs" and "tube-cleanings".

SAND-BANUM
is the
"Entirely Different Boiler Scale Eliminant"

It hurdles the barrier of skepticism—try it on our "Satisfaction or No Money Basis"—Prove It and KNOW!

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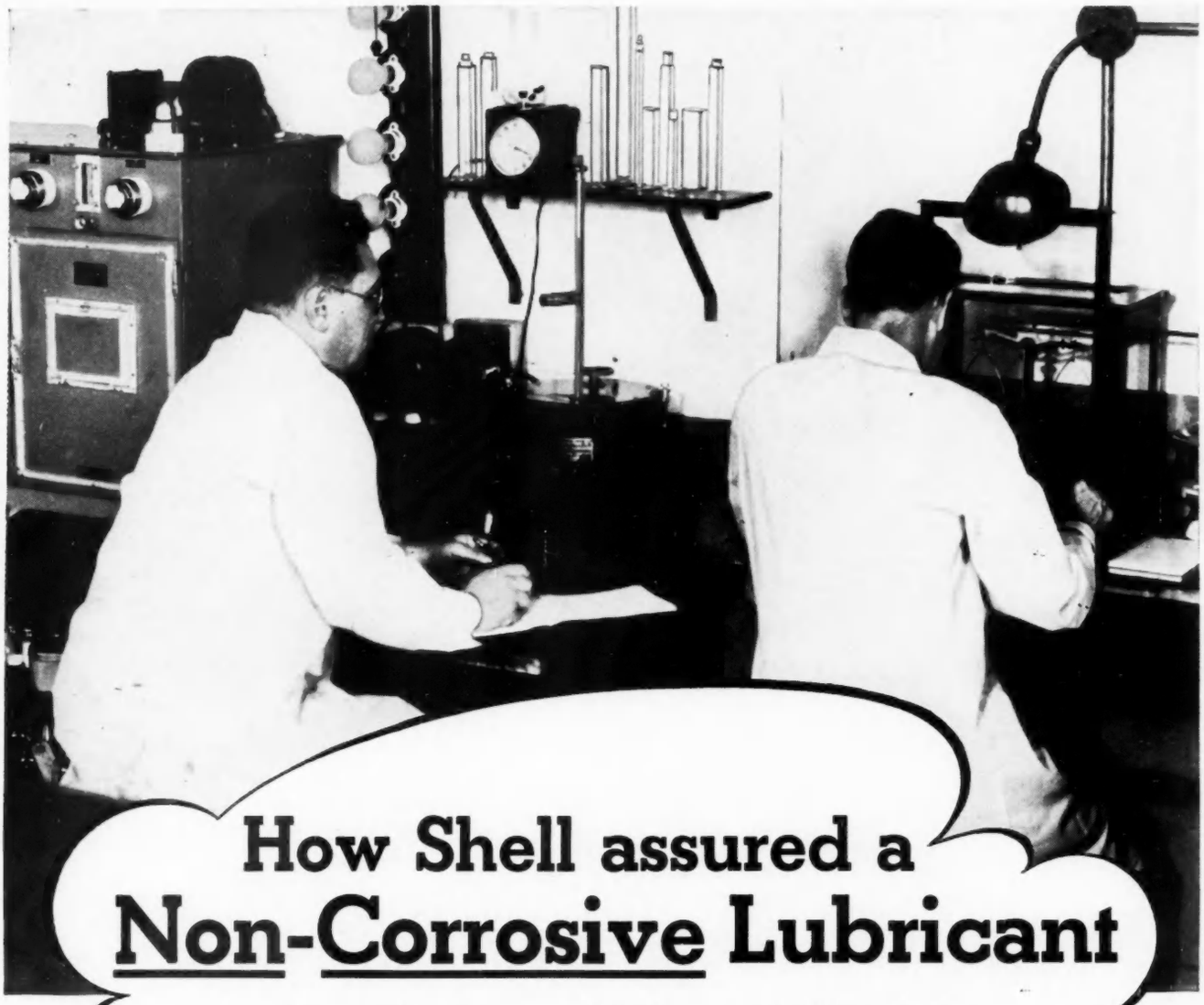

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With higher compression motors and greatly increased horsepower . . . old-style metal bearings couldn't stand the gaff!

So new alloys of *"Copper Lead"* were developed by automobile manufacturers. Bearings capable of resisting tremendous strain.

But Shell engineers anticipated that these new "Copper Lead" alloy bearings would quickly corrode in contact with certain types of lubrication.

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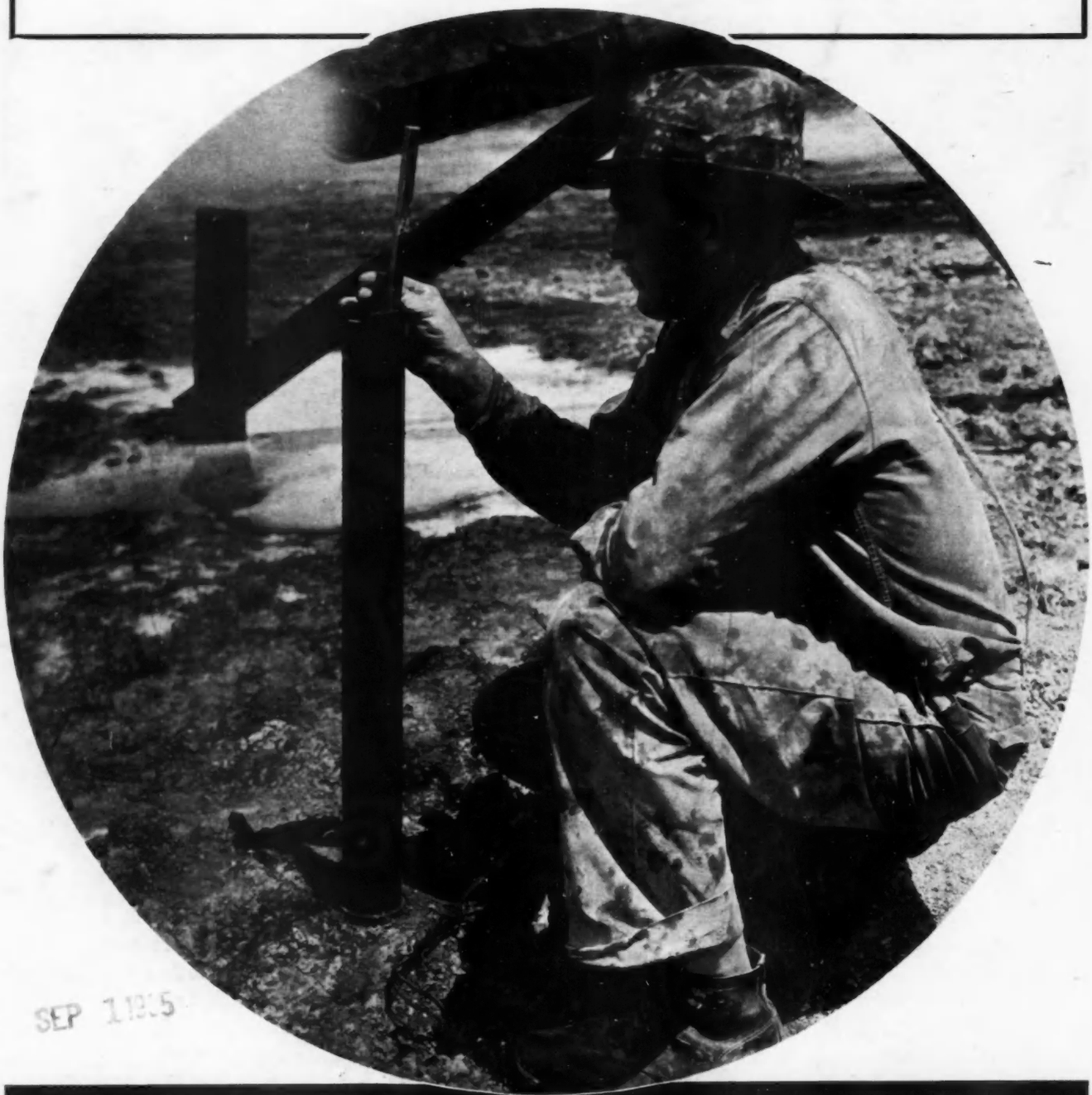
We know about the old mud-weigher, too—use it to test 'Incor' at the mill before it's shipped. That's one reason why you always get a free-flowing mix with 'Incor'—even when mixed to 16 pounds. • And, 'Incor' *stays mixed —it won't settle out.* It pumps easily, keeps out the mud, bonds firmly to casing and side of hole, even under difficult operating conditions. Hours sooner than ordinary cement, 'Incor' hardens into a dense, watertight, gas-tight mass. Tell your lumber dealer to give you 'Incor'* for your next job. • Made and sold by producers of Lone Star Cement, subsidiaries of International Cement Corporation, New York; also sold by other leading cement manufacturers.

*Reg. U. S. Pat. Off.



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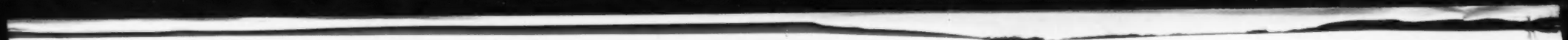
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